

Library of the Museum
OF
COMPARATIVE ZOOLOGY,
AT HARVARD COLLEGE, CAMBRIDGE, MASS.

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BULLETIN

OF THE

ESSEX INSTITUTE,

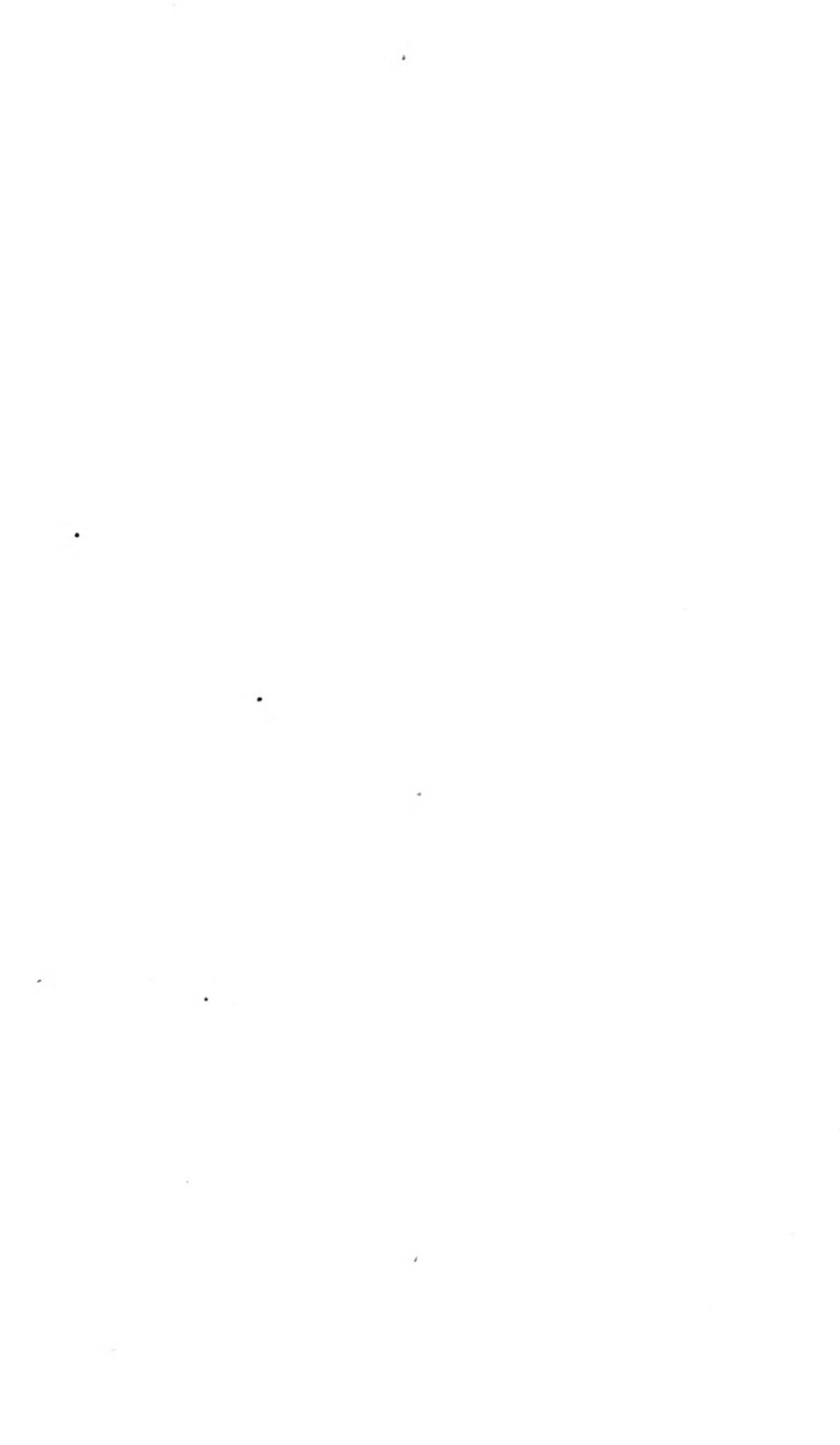
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1873.

SALEM, MASS.

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BULLETIN

OF THE
ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., JAN. AND FEB., 1873. No. 1.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, JANUARY 6, 1873.

THE PRESIDENT in the chair. Records of preceding meeting read.

DR. A. S. PACKARD presented a verbal communication, of which the following is an abstract, on

THE GLACIAL PHENOMENA OF NORTHEASTERN AMERICA COMPARED WITH THOSE OF EUROPE.

DR. PACKARD said that during a hurried tour through the Alps, he had specially observed the glacial phenomena of the regions which had been glaciated in past times. The impression made on his mind was that the evidences of the former presence of glaciers in valleys, at the heads of which were the ends of glaciers now existing, were scarcely more distinct than in the valleys of the White Mountains, the Adirondacks and even the coast of Maine and Massachusetts, in all of which localities he had in years past studied these phenomena. As he approached the Alps from the valley leading up to Kempten from Munich, he had noticed that in the region of Kempten

the valley was flanked by rounded moraines, clothed with pines and firs, and no better marked than those in the valley of the Saco about Conway. Their presence was revealed by the clearing away of the forests in the same manner as in the White Mountains and the Adirondacks. In one important feature, the marks were less apparent, as one does not see in the Alps the broad trains of boulders so common in the White Mountains, as they have been cleared away after centuries of occupation of the country. It was more difficult to detect striated and rounded rocks in the Alpine valleys than he had imagined from the accounts of Alpine geologists.

He should, however, make an exception to the valley of Hasli, in which the striae on the sides of the mountains are wonderfully distinct.

In Norway also the grooves and striae may be often seen in protected places, but are scarcely more apparent than about Salem, for example.

He also compared the ice marks and moraines in Wales with those of this country, and alluded to the identical appearance of the marine glacial beds of Sweden with those of northern New England. He thought that the student of this subject need not go outside of the limits of New England for excellent examples of the work done by ancient glaciers.

A general conversation followed on the subjects suggested by the remarks of Dr. Packard, participated in by Messrs. F. W. Putnam, A. C. Goodell, Jr., E. S. Atwood, A. H. Johnson and others; also on the inscriptions on stones, which have been supposed to be Runie, but are probably Indian; and on the visit of the Northmen, which seems to be historically believed, but of which no reliques have been found.

The President remarked that, twenty-five years ago this day, a meeting of the Essex County Natural History Society was held to act upon the report of a committee, appointed at a previous meeting, to confer with a similar committee of the Essex Historical Society, on the subject of a union of the two societies. The resolutions reported by the committee and adopted with some slight modifications were the basis of our present organization.

A committee was appointed to petition the Legislature for an act of incorporation, a committee for the same purpose having also been appointed by the Historical Society. The act was duly passed and was accepted by the two societies at meetings held March 1, 1848, and the organization of the Institute immediately followed thereon.

The President presented a brief statement of the organization and condition of the two societies at the time of the union, and made some remarks on the causes that led to this result, and alluded to the various conversations and discussions among the members before any definite action was taken by either society. He suggested the propriety of adopting some measures to commemorate this event.

After a discussion on this subject, a committee consisting of Messrs. A. C. Goodell, A. H. Johnson and E. S. Atwood was appointed to consider and report at an adjournment of this meeting, a plan to commemorate this epoch in the history of the Society.

The SECRETARY announced the following correspondence :—

From Samuel L. Boardman, Augusta, Maine, Dec. 20; A. J. Cook, Lansing, Michigan, Nov. 15; John T. Moulton, Lynn, Dec. 26; Edward Russell, Boston, Jan. 4; J. Lawrence Smith, Louisville, Kentucky, Dec. 23; New York, Genealogical and Biographical Society, Oct 31; New York Lyceum of Natural History, Dec. 23.

E. A. Goldthwaite of Salem was elected a resident member.

Voted, To adjourn to Saturday evening next at 8 o'clock.



ADJOURNED MEETING, SATURDAY, JANUARY 11, 1873.

The PRESIDENT in the chair.

Mr. A. C. Goodell reported, for the committee, several plans that had been suggested — after a disension on motion of Dr. A. H. Johnson.

Voted, That the twenty-fifth anniversary be celebrated by a banquet on Wednesday, the fifth of March, ensuing — at which members can procure tickets for themselves and their friends.

On motion of Mr. D. B. Hagar,

Voted, That a committee be appointed with full powers to make all arrangements.

The committee consists of Henry Wheatland, A. C. Goodell, Jr., William Sutton, F. W. Putnam, D. B. Hagar, A. H. Johnson, John Robinson, James O. Safford, E. C. Bolles, C. Cooke, E. S. Atwood, William Neilson, George D. Phippen, Joshua Coit, and G. M. Whipple.

Adjourned.



REGULAR MEETING, MONDAY, JANUARY 20, 1873.

THE PRESIDENT in the chair. Records of preceding meeting read.

THE SECRETARY announced the following correspondence :—

From Jacob Batchelder, Lynn, Jan. 9; E. M. Coffin, Orange, Jan. 8; A. W. Greenleaf, Newburyport, Jan. 7, 9; J. C. Holmes, Detroit, Mich., Jan. 9; M. L.

Huntley, South Lancaster, Mass., Dec. 24; J. Munsell, Albany, N. Y., Jan. 16; C. Fessenden Nichols, Boston, Dec. 27; A. T. Perkins, Boston, Jan. 16; John C. Ropes, Boston, Jan. 11; J. Henry Stickney, Baltimore, Md., Jan. 18; Cyrus Woodman, Cambridge, Jan. 11; Belfast Naturalists' Field Club, Nov. 1; Boston Society of Natural History, Jan. 1; Brooklyn Mercantile Library, Jan.; Bowdoin College, Jan. 13; Hague, Entomological Society of the Netherlands, Oct. 25; Hamburg, Naturwissenschaftlicher Verein, Dec. 10; Lisbon, Academie Royale des Sciences, Sept. 27; Maine Historical Society, Jan. 13; Maryland Historical Society, Jan. 13; New Haven, Yale College, Jan. 9; New York State Library, Jan. 13; Pennsylvania Historical Society, Jan. 16; U. S. Bureau of Education, Jan. 17.

The LIBRARIAN reported the following additions:—

By Donation.

CHAMBERLAIN, JAMES A. Manual for the General Court, 1858. 1 vol. 16mo. The New York State Guide, 1 vol. 16mo. Military Commission to Europe 1855, 1856, 1 vol. 4to. Proposition concerning Protection and Free Trade, 1 vol. 12mo. The Cultivator, 1845, 1 vol. 8vo. Guide through the Middle, Northern and Eastern States, 1847, 1 vol. 16mo. Patent Office Reports, 1854, 1856, 1857, 1858, 4 vols. 8vo. Report on Agriculture, 1862, 1863, 2 vols. 8vo. Salem Directory, 1851, 1 vol. 12mo. Miscellaneous pamphlets, 60.

COLE, MRS. N. D. Salem Gazette for 1872, 33 Nos.

EDITORS OF "THE NATION," New York. The Benson Family of Newport, R. I. 1 vol. 8vo.

FOOTE, C. Files of several County Papers for 1872. 209 Nos.

FULLER, MISS. Memoirs of Denmark, 1 vol. 12mo. London, 1700. Treason Unmask'd: or the Queen's Title, 1 vol. 12mo. London, 1713.

GARRISON, W. P., of New York. Constitution and By-laws of the New England Society of Orange, N. J., Dec. 1872. 16mo pamphlet.

HAWAIIAN BOARD OF EDUCATION. Ka Huinahelu Hov; via hoi ka Arimatika Kulanui, 1 vol. 8vo. Ka Buke Ao Heluhelu, 1 vol. 8vo. Ka Hoailona Helm, 1 vol.

HOLDEN, N. J. The Commonwealth, 1872. 38 Nos.

NATIONAL ASSOCIATION OF WOOL MANUFACTURES, Bulletin. Oct. Dec., 1872. NEW ENGLAND TRACT AND MISSIONARY SOCIETY OF SEVENTH-DAY ADVENTISTS AT SOUTH LANCASTER, MASS. United States in Prophecy, 1 vol. 16mo. Battle Creek, Mich., 1872.

NICHOLS, C. F. Webster's Dictionary, 1 vol. 4to. French's Poems, 1 vol. 8vo. Signs of the Times, 1 vol. 4to. Journal of Education, 1 vol. 4to. Chamber's Edinburgh Journal, 1838, 1 vol. 4to. Lessons on the Gospel of St. John, 1 vol. 12mo. Outlines of Phrenology, 1 vol. 12mo. Several pieces of Music.

ROPES, W. L., of Andover, Mass. Catalogue of the Andover Theological Seminary, 1872-3, 8vo pamph.

RUSSELL, EDWARD, of Boston. The Mercantile Agency Reference Book for July, 1871. 1 vol. 4to.

STONE, MISS MARY H. "The Nation." 222 Nos.

U. S. PATENT OFFICE, Washington, D. C. Official Gazette for Dec. 17, 24, 31, 1872.

By Exchange.

BELFAST NATURALISTS' FIELD CLUB. Sixth, Eighth and Ninth Annual Reports, 1868-9, 1870-1, 1871-2. 3 pamphlets, 8vo.

BIBLIOTHÈQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences Physiques et Naturelles, Sept., Oct., Nov., 1872. 3 pamphlets, 8vo.

CANADIAN INSTITUTE OF TORONTO, CANADA. Journal of Science, Literature and History, Dec., 1872. 8vo pamph.

HARVARD COLLEGE LIBRARY. Annual Reports of the President and Treasurer of Harvard College for 1871-2. 8vo pamph.

IAWA STATE HISTORICAL SOCIETY. The Annals of Iowa, Oct., 1872. 8vo pamph.

KONIGLICHE PHYSIKALISH-OKONOMISCHE GESELLSCHAFT IN KONIGSBERG, PRUSSIA. Schriften, 1871-2. 3 pamphlets, 4to.

NATURHISTORISCHEN GESELLSCHAFT ZU NÜRNBERG. Abhandlungen, v. Bd., 1872. 8vo pamph.

NATURWISSENSCHAFTLICHEN VEREIN IN HAMBURG. Abhandlungen aus dem Gebiete der Naturwissenschaften. Bd. v, II Abth. Mit 9 Tafeln. 4to pamph. Uebersicht der Aemter-Vertheilung und Wissenschaftlichen Thätigkeit, 1869. 1870. 2 pamphlets, 8vo.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Historical and Genealogical Register and Antiquarian Journal for Jan., 1873. 8vo pamph.

SOCIÉTÉ ENTOMOLOGIQUE DE BELGIQUE, IN BRUXELLES. Annales, Tome xiv, 1870-71. 8vo pamph.

STATE HISTORICAL SOCIETY OF WISCONSIN. Transactions of the Wisconsin Academy of Sciences, Arts and Letters, 1870-2, 8vo pamph.

PUBLISHERS. American Journal of Science. American Naturalist. Bossange's Monthly. Christian World. Dexter Smith's Paper. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Merrimac Valley Visitor. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Observer. Western Lancet.

DR. EMERSON'S EXCURSION TO PHILADELPHIA FIFTY YEARS AGO.

The time at the meeting was chiefly occupied by Rev. E. S. Atwood, who read copious extracts from a journal of the late Rev. Brown Emerson, in which was given an account of an excursion which he made to New York and Philadelphia, starting on April 23, 1822, and arriving home again after an absence of four weeks and five days.

The journal contains many interesting incidents of the trip, and quite a full and equally interesting account of the friends and places visited on the way. He left Salem, April 23, in a stage. On Tuesday evening, in Boston, called on Rev. Mr. Wisner and negotiated an exchange. "Called also on J. Peabody and spent most of the evening. He had noticed the publication of my journey in the *Salem Gazette*, which was some mortification to me." On Tuesday night he put up at Earle's Hotel, on Hanover street, and was awakened on Wednesday morning at

two o'clock, at which hour he started in the stage on his way to Northampton, where he arrived at night, and the next morning took great pleasure in visiting the house where President Edwards lived when he was settled in the town.

He started from Northampton at eleven o'clock on Thursday, in a stage, arriving at Hartford at eight in the evening. Springfield, he described as "a pleasant town, having the appearance of considerable business and wealth." There seemed to be sudden changes in the weather fifty years ago as well as now; for while the ride of Wednesday was a very cold one, on Thursday it was a hot summer day, the thermometer indicating 88 degrees, and the cattle panting in the shade. The advent of a minister from a distance seemed to be regarded as quite a distinction on the way, and at Bennett's hotel, on Friday morning, at breakfast, the landlord conducted him to the head of the table, and, calling the attention of the company, requested him to ask a blessing. Dr. Emerson adds: "This was a gratification to me, because it was apparent the company were not accustomed to this religious duty at the breakfast table, *and I was saved from the painful office of calling their attention to it myself;* and because it evinced in the landlord a regard to religious duty and a respect for the ministerial character."

He remained at Hartford, visiting among other things, the Deaf and Dumb Asylum, until the following Tuesday, when, at nine o'clock, A. M., he started for New Haven, where he arrived at four in the afternoon. He remained here until the following Friday, seeing many ministers, visiting Yale college, etc. On Friday, went on board the steamboat which started for New York at a quarter before seven o'clock, P. M. He describes the steamer as a "floating ark, one hundred and forty-six feet long and

forty-two broad, and the supper table in the principal cabin as being laid with as much taste and elegance as we find in our best hotels, and furnished with as great and rich a variety." So the palatial steamboat living is not so modern an idea as some of us seem to think. The drawing for berths, by lot, is described, but the following shows that the drawing was not altogether impartial:—

"When my name was called, Capt. B. smiling, said, 'There has been great inquiry about Mr. Emerson, and many of my New Haven friends desired me to give him a good berth.' The captain then drew for me a ticket, which gave me one of the best berths in the boat. I mention this as a proof that, though the berths are assigned by lot, 'the whole disposing thereof' is not directly 'of the Lord,' and as an expression of kind attention to a stranger on the part of some of the citizens of New Haven."

The only other incident of note connected with the trip to New York, was the open announcement at an early hour, which all could hear in their berths, "No fear, we have passed the gate of Hell,"—alluding to the passage at "Hurlgate."

The boat arrived at New York at three o'clock on Saturday morning, and he remained there, seeing the sights, and hearing some of the eminent and other preachers, until the following Friday, when he sailed for New Brunswick, N. J., thirty-five miles distant. There he remained until the succeeding Tuesday, May 14, when he started, by a very slow and dilapidated stage, for Trenton, where he was to take the boat for Philadelphia. The team arrived too late, but it pressed on to Bristol, ten miles below, and there caught the boat, which, at eight o'clock, began to move down the Delaware, the city of Philadelphia coming in sight at half-past ten.

During his stay in Philadelphia, he visited the different

localities of interest, and attended some of the sessions of the Presbyterian Assembly. One of the sermons to which he listened was that of Rev. Mr. Howe, of New Brunswick, whom he described as a "noisy, boisterous, declamatory, and dashing preacher."

Dr. Emerson remained in Philadelphia until twelve o'clock on Wednesday, May 22, when he took the steam-boat on his way home, by way of Trenton, New Brunswick, New York, New Haven, and New London. He arrived at Boston on Saturday night, May 26th; and, hearing of the severe sickness of his wife, and, finding that an exchange which he had previously arranged, could be provided for, he took a conveyance home early on Sunday morning,—his journal concluding with a warm expression of the abundant reason he had for gratitude to God that his trip had been made with so much pleasure and safety.

In the back part of the book in which this journal was kept, Dr. Emerson gives a minute account of his expenses, and we reproduce the list, as having interest for comparison with present prices:—

Salem to Boston, \$1.00; lodging at Earle's hotel, 25 cents; stage, Boston to Framingham, \$1.50; breakfast, 50 cents; Framingham to Brookfield, \$2.50; Brookfield to Belchertown, \$1.31; Belchertown to Northampton, \$1.00; supper, breakfast and lodging at Northampton, 75 cents; cake at Suffield, Conn., 6 cents; stage from Northampton to Hartford, \$3.00; supper, breakfast and lodging at Bennett's hotel, \$1.00; stage from Weathersfield to New Haven, \$2.25; dinner at New Haven, 50 cents; shaving in New Haven, twice, $12\frac{1}{2}$ cents; conveyance to steam-boat, 25 cents; steamboat fare from New Haven to New York, \$5.00; cleaning boots in steamboat, $12\frac{1}{2}$ cents; conveyance of baggage from steamboat 25 cents; break-

fast at Bunker's hotel, N. Y., 50 cents; carrying baggage 25 cents; boat and stage fare from N. Y. to Princeton, \$2.00; dinner in boat, 75 cents; supper, lodging, and carrying baggage at P., 68 cents; stage, extra, from Princeton to Bristol, Pa., \$2.00; steamboat from Bristol to Philadelphia, 50 cents; breakfast on boat, 50 cents; carrying baggage, 25 cents; shaving at N. H., 12 cents; ferry, N. Y. to Brooklyn, 8 cents; four meals and two lodgings at Mrs. Anstris', \$2.00; museum, 25 cents; hospital, 12½ cents; porter, 18 cents; boat and stage from Philadelphia to N. Y., \$2.50; lodging at N. Brunswick, 25 cents; dinner and breakfast in boat, \$1.00; porter 12½ cents; stage from New London to Boston, \$7.00; breakfast and dinner, \$1.00; stage from Boston to Salem, \$1.00. Total expenses, \$52.42.

In May, 1837, Dr. Emerson made substantially the same trip with his brother Reuben, and he noted the principal expenses as follows:

Salem to Boston, \$1.00; Boston to Providence, \$2.00; P. to N. Y. ("found") \$5.00; N. Y. to Philadelphia, \$3.00; total, \$11.00.



REGULAR MEETING, MONDAY, FEBRUARY 3, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From William Gray Brooks, Boston, Jan. 28; Caroline H. Dall, Boston, Jan. 9; J. H. Emerton, Boston, Jan. 31; Samuel Henshaw, Boston, Jan. 20; Edward P. Hurd, Newburyport, Jan. 26; Wm. Parsons Lunt, Boston, Jan. 28; J. Munsell, Albany, N. Y., Jan. 21; J. L. Sibley, Cambridge, Jan. 22; D. J. Tapley, New York, Jan. 27; W. O. Townsend, New York, Jan. 20; Charles A. Walker, Chelsea, Feb. 3; Boston, Public Library, Jan. 27; Calcutta, Indian Museum, June 4; Harvard Col-

lege Corporation, Jan. 24; Marburg, Gesellschaft zur Beförderung der Gesammten Naturwissenschaften, Oct. 18; Smithsonian Institution, Jan. 17; Yale College, Corporation, Jan. 31; Zurich, die Naturforschende Gesellschaft, July 1.

The LIBRARIAN announced the following additions:—

By Donation.

- ATWOOD, E. S. Miscellaneous pamphlets, 85.
 BROOKS, Mrs. H. M. Woman's Journal, 1872. 21 numbers.
 CHAMBERLAIN, JAMES A., Boston. Board of Trade, 1856, 1867. 11 vols. 8vo.
 Instruction for Field Artillery. 1 vol. 8vo. Boston Directories for 1861, 1863, 1864. 3 vols. 8vo. Patent Office Reports for 1849-1850, 1850, 1850-1851, 1856. 4 vols. 8vo. New England Business Directory, 1860. 1 vol. 8vo. Boston Almanacs for 1853, 1855. 2 vols. 16mo. The Tax Payer's Manual. 1 vol. 8vo. Miscellaneous pamphlets, 6.
 NATURALIST AGENCY. The Great Industries of the United States. 1 vol. 8vo. 1872.
 U. S. PATENT OFFICE, WASHINGTON, D. C. Official Gazette. Jan. 7, 1873.

By Exchange.

- ENTOMOLOGISCHER VEREIN IN STETTIN. Entomologische Zeitung. Herausgegeben von dem Entomologischen Vereine zu Stettin. xxxiii, Jahrg. 8vo pamph.
 GESELLSCHAFT ZUR BEFÖRDERUNG DER GE SAMMten NATURWISSENSCHAFTES IN MARBURG. Schriften. Bd. ix, x. Sitzungs berichte, 1869, 1871.
 HISTORICAL SOCIETY OF PENNSYLVANIA. Memoirs of. Vol. x. 1 vol. 8vo. Catalogue of the Paintings, etc., belonging to the Historical Society of Penn. 8vo.
 NATURFORSCHENDEN GESELLSCHAFT IN ZÜRICH. Vierteljahrsschrift, Jahrg. xvi. 8vo pamph. Neuchatel, 1871.
 ROYAL SOCIETY OF LONDON. Proceedings of. Vol. xx. Nos. 130-137. 8vo.
 SOCIÉTÉ D'ACCLIMATATION DE PARIS. Bulletin Mensuel Tome ix, Aout, Sept. Oct., 1872. 3 pamphlets. 8vo.
 SOCIÉTÉ DES SCIENCES NATURELLES IN NEUCHATEL. Bulletin, Tome ix. 2me. Cahier, 1872. 8vo pamphlet.
 VEREINS FÜR ERDKUNDE ZU DRESDEN. Jahres bericht viii und ix. 1872. 8vo.
 PUBLISHERS. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Observer.

The SUPERINTENDENT OF THE MUSEUM announced the following donations to his department:—

- STICKNEY, M. A. Miscellaneous manuscripts.
 WATERS, E. S., of Chicago, Ill. Water Vase, bought in London, Aug., 1870 stored in the basement of 108 Cass St., Chicago, and dug from its ashes, Nov., 1871.

William Fobes Gavett of Salem, was elected a resident member.

Mr. JAMES H. EMERTON made an interesting statement of the results of his observations on the

WORMS OF THE GENUS NAIS.

He mentioned that, Oct. 21, he took from the large pond near Legg's hill a quantity of bladderwort and other floating plants, among which, with the animals usually found in the pond, were large numbers of worms of the genus *Nais*, each wearing a tubular case covered with seeds and water plants and in part with the eggs of *Daphnia*. On removing the cases, a large proportion of the worms showed the beginning of a division into two and sometimes the struggles of the worm while its case was being removed were enough to complete the separation.

The first appearance of division was a larger interval than usual between two pairs of setæ near the middle of the body, around which a slight wrinkle marked the line of future separation.

Just behind this crease, on the under side of the body, next appeared rudiments of four pairs of bunches of hooked setæ, marking the four segments next behind the mouth of a new worm. At the same time in front of the line of division appeared a great number of new segments crowded together, which were to form the posterior end of the forward worm, and just behind them grew out a pair of long appendages, like those at the end of the old worm. The line of division became more and more distinct, until the appearance was presented of one worm, with another just like it fastened to its tail. At length the division took place, and at the divided part one worm developed a new mouth, and the other a new set of respiratory appendages.

In a few days another worm, *Chaetogaster*, appeared in

the water, which divided up in a more complicated way. While one division was going on, and before the parts separated, each half again divided itself, and each of these quarters again divided, and so on, until a chain was formed of a dozen or more unfinished worms, all using the mouth of the foremost one, and having their digestion and circulation in common.

The PRESIDENT announced the death of an associate member, Henry C. Perkins, M. D., of Newburyport, who died suddenly at his home on Saturday. In the morning he was taken ill. No special danger was apprehended during the day, though some anxiety was felt; about seven o'clock in the evening, while physicians were in the house and friends were near him, he suddenly closed his eyes upon this world and expired.

Dr. Perkins was the son of Thomas and Elizabeth Perkins, and was born in Newburyport, Nov. 13, 1804. He fitted for college at the Newburyport academy and entered the Freshman class at Harvard in 1820, graduating in 1824. He immediately commenced the study of medicine with Dr. Richard S. Spofford, of Newburyport. In October, 1825, he entered his name as a student with Dr. J. C. Warren, of Boston, and continued with him until he received the medical degree in August, 1827. On the 3rd of September, 1827, he commenced practice in Newburyport, having had a professional life in that place of a little more than forty-five years.

He was well known as a zealous and enthusiastic student in several branches of science. His investigations went out in a great variety of ways. He undertook the grinding and polishing of the lenses for a telescope. He experimented on the qualities of chloroform and ether as anæsthetics. Some fossil bones, brought to this city in a

vessel of the late Capt. Cushing and given to him, led him into the study of comparative anatomy. He calculated the orbits of comets; he engraved; made for himself a microscope; was the first in this country to follow Daguerre in his remarkable discovery; was a student of meteorology; and after he was sixty-five years old learned the German language, that he might translate a work of Dr. Ernst Hallier, entitled, "Parasitical Investigations upon the Vegetable Organisms found in Measles, Typhus Abdominalis, Small Pox, Kine Pock, Sheep Pock, Cholera, etc." To this translation the doctor added an appendix, giving his own observations continued for months, confirming those of Professor Hallier. He was scholarly in all his habits, and kept up a familiarity with the classics, but the book of nature was his special delight.

Dr. Perkins was highly esteemed for his scientific and other attainments, and was frequently called to offices of honor and trust. He was for two successive terms President of the Massachusetts Medical Society; a member of the American Academy of Arts and Sciences; President of the Common Council of Newburyport during the years 1858-59, and a representative of that city in the state legislature several times; and during many years previous to his decease a trustee of the Putnam Free School, and trustee of the Institute for Savings for Newburyport and vicinity. He was appointed by Mr. George Peabody, in 1867, one of the trustees for the fund for the Promotion of Science and Useful Knowledge in the County of Essex, since incorporated under the title of "The Trustees of the Peabody Academy of Science," and having its museum and collections in this city.

After remarks from Rev. E. C. Bolles, Dr. A. H. Johnson and Messrs. F. W. Putnam and A. C. Goodell,

Jr., on the character of our deceased associate as a scholar, a physician and a citizen, the following resolutions were unanimously adopted :—

Resolved, That the Essex Institute hereby expresses its deep sense of the value of the labors of its late resident member, Dr. HENRY C. PERKINS, in various branches of science; its appreciation of the purity of his life and character; and its sympathy in their loss with the members of his family.

Resolved, That the Secretary be instructed to put these resolutions upon record, and to furnish a copy of the same to the family of the deceased.

A resolve was also adopted, directing the Secretary to invite some friend or friends in Newburyport to prepare a memoir of Dr. Perkins for publication in the "Historical Collections of the Essex Institute."



REGULAR MEETING, MONDAY, FEBRUARY 17, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From B. F. Browne, Salem, Feb. 5; Jacob Batchelder, Lynn, Feb. 11; Wm. G. Brooks, Boston, Feb. 15; C. H. Dall, Boston, Feb. 5; Henry B. Dawson, Morrisania, N. Y., Feb. 1; Joseph H. Frothingham, New York, Feb. 11; Alfred Osgood, Newburyport, Feb. 11; W. Stevens Perry, Geneva, N. Y., Feb. 7; Edmund F. Slatter, Boston, Feb. 10; Bruxelles, Societe Entomologique de Belgique, Jan. 24; Iowa State Historical Society, Feb. 5; New York State Library, Feb. 1.

The LIBRARIAN reported the following additions :—

By Donation.

BUTLER, B. F., of U. S. H. R. Report of the Department of Agriculture for Jan., 1873. 8vo pamph. Alabama Claims, by donor. 8vo pamph.

CUTTER, ABRAM E., of Charlestown. Annual Report of the School Committee of Charlestown for 1872. 8vo pamph.

HOLDEN, N. J. The Commonwealth, 21 numbers. The Literary World, 12 numbers. The National Standard, 7 numbers. Orders of the Day, Senate, Jan. 19, June 21, 1869.

LEE, JOHN C. Commercial Bulletin, Jan. 4, 11, 18, 25, Feb. 1, 1873.

LEVETTE, G. M., of Indianapolis, Ind. Indiana Agricultural Reports for 1872. 1 volume. 8vo. Report of the Superintendent of Public Instruction of Indiana for 1872. 1 vol. 8vo. Geological Survey of Indiana for 1872, by E. T. Cox. 1 vol. 8vo. Maps for the Geological Survey.

LINCOLN, SOLOMON. Industry of Mass. 1865. 1 vol. 8vo. Adjutant General's Report. 1855. 1 vol. 8vo. Report of Board of Education of Mass. 1871. 1 vol. 8vo. Board of Agriculture of Mass., by C. L. Flint. 1868-9. 1 vol. 8vo. Annual Report of the Board of State Charities. 1865, 1868. 2 vols. 8vo. Registration Reports of Mass. 1864, 1866. 2 vols. 8vo. Eighth Census of the United States. 1870. 1 vol. 8vo. Insurance Commissioner's Reports for 1865-1867. 2 vols. 8vo. Student's Life, by S. Osgood. 1 vol. 12mo. Ciceronis Brutus, by C. Beck. 1 vol. 12mo. Army Regulations. 1861. 1 vol. 12mo. Whitaker's Almanac. 1871-72. The National Almanac. 1863. British Almanac and Companion. 1858. 1 vol. 12mo. Rules and By-laws of Board of Overseers of Harvard College. 1 vol. 12mo. Manual for the General Court. 1864, 1869. 2 vols. 12mo. Statistical Pocket Manual. 1 vol. 16mo. Directory of Cambridge for 1851. 1 vol. 12mo. Boston Almanacs. 1860, 1861. 2 vols. 16mo. Warren's Common School Geography. 1 vol. 4to. Miscellaneous pamphlets, 110.

MASSACHUSETTS HORTICULTURAL SOCIETY. Schedule of Prizes for 1873. 8vo. Messrs. WHIPPLE AND SMITH. Industry of Massachusetts for 1855. 1 vol.

MOULTON, JOHN T., of Lynn. Anniversary Address in Wales, Oct. 5, 1862, by A. Gardner. 8vo pamphlet.

U. S. DEPARTMENT OF THE INTERIOR. Ninth Census of the U. S. 1870. 1 vol. U. S. PATENT OFFICE, WASHINGTON, D. C. Official Gazette, Jan. 21. 1873.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY OF WORCESTER. Proceedings of, at the Annual Meeting, Oct. 21, 1872. 8vo pamphlet.

AMERICAN PHILOSOPHICAL SOCIETY OF PHILA. Proceedings of, July-Dec. 1872. 8vo pamphlet.

BOWDOIN COLLEGE LIBRARY. Catalogue of the Officers and Students of Bowdoin College for 1872. 1-mo pamphlet.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Address of Hon. M. P. Wilder at the Annual Meeting, Jan. 1, 1873. 8vo pamphlet. Proceedings of the, at the Annual Meeting, Jan. 1, 1873. 8vo pamphlet.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record for Jan., 1873. 8vo pamphlet.

NEW YORK STATE LIBRARY. Meteorology of New York. 1850-1863. 1 vol. 4to. 1872.

NOVA SCOTIA INSTITUTE OF NATURAL SCIENCE OF HALIFAX. Proceedings and Transactions, Vol. iii, pts. i, ii. 1870-1872. 2 pamphlets. 8vo.

PUBLISHERS. American Journal of Science and Arts. American Naturalist. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Observer. Western Lancet.

BULLETIN OF THE ESSEX INSTITUTE.

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One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, FEBRUARY 17, 1873.

[*Continued.*]

Mr. STEPHEN M. ALLEN made a communication on the
ANCIENT AND MODERN THEORIES OF LIGHT, HEAT AND COLOR.

Light, heat and color appeal to our senses from the beginning to the end of life. These phenomena, so closely allied, have for generations appeared alike mysterious to youth and age,—to the simple child of nature and the leaders of scientific research. If any persons have satisfied themselves fully as to the true cause of either, they have transmitted no explanatory theory which has stood the test of time.

The discovery and uses of the spectroscope have for the past five years taken the world by storm, and as a natural consequence there have been greater changes in the theories of light and color than for a century past. The physicists of Europe and America, who employ the spectroscope, claim that by its assistance light and color may be employed to discover the primary elements of

luminous bodies, and that by comparing the prismatic effects of sun rays with those of artificial lights, they may identify or discriminate between their causes. This discovery, so confidently announced in 1870, in some respects seemed to confirm the Actien theory which we had the honor to publish some ten years before. The spectroscope would apparently contradict or disprove Sir Isaac Newton's real theory of light; but a careful investigation convinces one that the theory based on the spectroscope is tenable only for our atmosphere, revelations claimed for it outside this, failing in their proof; also, that Newton's theory of the origin of light and its natural properties has been misunderstood and misquoted.

Actien* is a primary principle, the most subtle of all known elements, emanating from the sun in straight lines towards its planets, its flowing rays creating, in their passage to the earth, electricity, magnetism, light, heat, color, and many other properties by their friction upon and combustion with the atmosphere, ultimately reducing all elements to their utmost density, and producing a constant crystallization and consolidation of matter. This creative principle is supposed to pass from the sun, either in all directions through the solar system, or in concentrated rays exclusively upon the planets of its creation, not necessarily bearing light or heat as it passes through space, those elements being generated within the circle of the atmosphere of the planet. When this fluid reaches and pervades the atmosphere, the contact, or friction with it, instantly causes a combustion, producing the magnetic, electric and calorific changes, involving, as a sequence, light, heat and color, the aurora borealis, zodiacal, cometary and phosphorescent lights, as well as the "pole of

* Actien, the primary of Actin, or rays.

cold," and many other phenomena. Heat seems of late nearly divorced from light and color, though this is only an apparent separation. The Actien theory materially qualifies the estimate of the nature and origin of all these elements. Late astronomical publications still tell of the heat of the body of the sun, and the hourly consumption of combustible material on its surface necessary for our supply of light and heat. But the present advanced undulatory theory of light promises to qualify such a principle very much.

The fact of increasing darkness and coldness, experienced by one in rising from the mean surface of the earth, either by climbing mountains or balloon ascension, magnifies the doubt that heat is emitted from the sun in the form received by us; and the result of investigation plausibly shows that we may yet account for the origin of the calorie that we use, in a much more satisfactory and perhaps economical manner.

The advocates of the spectroscopic theory base their belief principally on the undulatory theory of light, which they claim Sir Isaac Newton denied, as well as upon the theory that light is composed of colors, which he did, emphatically, deny; and as the correctness of the spectroscopic theory in a measure depends on this misconception of the real constituents of white light, it seems properly a subject for investigation. Newton's theory of white light, as generally understood, is an emission, or corpuscular theory, and that its rays are a compound of seven different colors, made up of corpuscles; thus contradicting the theory of undulations. But from careful investigations of his original work, which these assumptions render necessary, it will be found that his idea was essentially different from that which has usually been attributed to him, during the past fifty years. It not only

disagrees with the spectroscopic theory concerning the taking of prismatic colors as tests of elementary essence, but also qualifies the emission theory, and the theory of color which this is said to represent. It clearly appears that Newton understood and appreciated the undulatory theory as a *transmitting*, if not a *creating* power. Neither he nor his predecessors declared light composed of colors, but called rays of light *color makers*, through prismatic refraction and reflection; colors never appearing until rays were thrown through and were refracted by prisms or lenses, thereby creating the color, according to the angle of refraction, separating the rays unequally and admitting plates of atmosphere between. Various extracts from his well known work on "Optics" distinctly prove that "emission" and "corpsele" are not used in the sense generally attributed to him, and it does not appear that he contradicted or denied the undulatory theory as a *transmitting* power. He often referred to the condition of the atmosphere or ether of space, as *trembling*, *waving*, etc., so that the rays are transmitted, as sounds are, by waves or undulations; and further, implied that colors may not be created, by any original principle of sun rays other than their mere flexibility or refrangibility. This need not be connected with color as an original principle, though the atmospheric plates, falling between the deflected rays may create color by irregular over and under lippings of shaded lines. It cannot be denied that Newton, though understanding the present undulatory theory, did not credit it with being the *origin*, but only the *vehicle* of light.

Many, since the day of Newton, have worked assiduously in the field of optics and color; prominent among these is Goethe, whose elaborate work was not fully appreciated. His mistakes in quoting Newton come from the inadvert-

tent assumption that color pervades the sun rays *before* the prism, instead of *after* it; the fact being that colors never appear in the primary rays until after having passed through a deflecting lens, which creates the colors beyond it. Hence we judge that an *emitting* theory of light, and a *corpuscular* theory of colors are nearer to Newton's real meaning, than the common interpretation. As his statements show the undulations to be *transmitting* rather than creating powers, he appreciated the distinction between crossing and travelling with the ether waves. The separation, or dispersion of rays by a prism, creates in the atmosphere, according to the angle from whence the ray is thrown, a body to the ray, not before possessed.

Any resultant color is a legitimate consequence of the introduction of a plate of the atmosphere with its molecular composition, between, or overlying, the ray, proving as tangible a result, perhaps, as mixing colored pigments with a white base. We may fairly infer that light has not the same consistency in the space between our atmosphere and the sun, as within the atmosphere itself.

Rays of light probably do not meet exactly the same resistance, at any two given points, in passage to our atmosphere. This we may safely assert, though the atmosphere itself is but imperfectly known to us, even at ten miles distance from the earth's surface. Although the principle of light emanates from the sun, light itself is only a small resultant element, as color may be a resultant of light, not necessarily representing a constituent principle of light itself.

Undulations over or through which rays pass, may be simply confined to the atmosphere near the earth's surface, though assumed to extend much farther into space. The primary principle or power from the sun, would naturally be composed of something more subtle than

any single element known to us. Why may not this be the parent of all subordinate elements, as claimed by the Actien theory? This theory does not fix the density or composition of the sun, nor call for the emission of light or calorie, which the old theories demanded; nor is it inconsistent with the great ether-ocean of space (if such a principle exists) through which it may pass, under the same laws which exist for the transmission of magnetic and electric fluids over wires, either by continuous flashes from point to point, or by the displacement of forces, through and over waves of undulation?

This fluid, repellent, yet constructive, adverse to the sun's gravitation, measures precisely the distance and orbits of its creations, and causes their revolutions either axial or orbital at right angles with the line of propulsion.

A ray of light, passing through a small hole in a curtain to a darkened room, when observed from different points, will present different appearances. From a point horizontal with the line of the ray, it presents one appearance, while at right angles the effect is quite different, and the floating particles of dust which can be detected, either by the naked eye or an instrument, will yield different colors, according to the line of their angles, which is constantly changing. The stratification of the atmosphere, or any transparent substance, will show a similar result, when observed on a line with, or at right angles to, the plane of stratification. And the form of crystallization must ever have a great effect upon the polarization of particles.

The cause of the emanation of Actien from the sun may be accounted for on two principles:—the fluid may be the great ultimate or concentrated principle of the sun itself, the resultant product of all action that has or could take place within its body; if so, that principle could not

remain at rest on the sun itself, or in its atmosphere, whatever the composition of either may be. It must pass off, giving place to other undeveloped, but constantly increasing, forces, behind. It may be inferred that there are such forces, and that each revolution of the sun lifts them on a stage, and that there is a refined and finished part at least that never returns.

This condensed and sublimated principle may be propelled or thrown off from the body of the sun and its atmosphere against its own, or the gravity of the sun by centrifugal forces, with such power as to reach the remotest planets of its own creation, and produce the results there observable. Or this fluid may escape well defined and specific limits of a solar atmosphere by its own volatility or difference in gravity, entering the unresisting ocean of ether beyond, but seeking a lodgment of its own creation through the origin and growth of planetary worlds. It does not matter to us which explanation we accept. It is enough to know that it does flow from that orb, and that it does answer our purpose.

We suppose that Actien passes in straight lines through space, to our own atmosphere, where the work of change and transformation begins. This theory will also admit of a plutonic origin of the germ of a planet, thrown off as a cinder, from the sun, although it would be without form, and void of atmosphere or water, a mere molten mass or shell, hurled into space as a nucleus for further transformation under the influences of Actien. If such was the origin of the nucleus of planetary worlds, they would be somewhat like the moon, which can have but little atmosphere, and consequently no water to fill the immense cavities observable on its surface, unlike our earth whose caverns have been filled with briny sheets of condensed vapor. When the rays of Actien reach the atmosphere,

or any body capable of commencing the process of decomposition, the work begins and increases in measure and action, according to the resistance encountered. Of the elements generated from Action, we may enumerate electricity, magnetism, light, heat and color, an atmosphere, earth, and all it possesses. Electricity seems to be one of the quickening, disintegrating powers, while magnetism is more concentrative, and belongs to the fixing or consolidating elements. The former takes no rest, but is ever goading all other elements to action and driving them on to their destiny, while the latter seizes the objects of its concentrated labor, holding them fast and crystallizing them in every form that nature demands. Of other existence of these elements, both mechanical and chemical, we have full proof. Mineralogy and chemistry have already enumerated and classified much for us. Geology, vegetable chemistry, and atmospheric changes give us a wide field to work in, and a reliable finger-board is ever pointing us onward. The currents of electricity and magnetism are no doubt governed by fixed laws, which we are getting to understand better and better every day. Their action as a secondary cause (Action being first) may be considered more important than any other elements we now understand in the creation of worlds, and consolidation of matter. Our planet, like the sun, may also throw off a creating fluid or power, for the formation of planets of its own. The moon appears like a cinder, ragged and cavernous, around which but little atmosphere exists, and consequently with no water or vegetable life. These may be forming—approaching through time to a perfect habitation, peopled and cultivated—a child of earth and one of the gems of infinity.

REGULAR MEETING, MONDAY, MARCH 3, 1873.

Meeting this evening at 7 30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Francis H. Appleton, Boston, Feb. 17; Geo. Cogswell, Bradford, Feb. 20; C. H. Dall, Boston, Feb. 19, 21; A. W. Morgan, New York, Feb. 17; Wm. S. Peabody, Boston, Feb. 17; Jonathan Pearson, Schenectady, N. Y., Feb. 26; S. J. Spaulding, Newburyport, Feb. 3; E. Steiger, New York, Feb. 25; Danzig, Die Naturforschende Gesellschaft, Oct. 4; Genève, Société de Physique et d' Histoire Naturelle, Nov. 1; Lyon, Société d' Agriculture, d' Histoire Naturelle, et des Artes Utiles, Dec. 20; New York Genealogical and Biographical Society, Feb. 18; München, K. Bayerischen Akademie der Wissenschaften, Dec. 1.

Mr. JOHN ROBINSON spoke of the death of Mr. Abram F. Bosson, which occurred on the 21st ult., at his residence in Salem, by which the society loses one of the most prominent exhibitors of flowers at the horticultural exhibitions. Mr. Bosson's particular favorites were the dahlias and gladiolus; his stands of the former at the exhibitions ten or twelve years since were of the most gorgeous description. Of late years he has cultivated the gladiolus most extensively, the endless variety and profusion of which at the last series of exhibitions held by the Institute caused much comment, and gave great pleasure to the many visitors. After some other remarks the following resolutions were presented and unanimously adopted :—

Whereas, The Essex Institute, by the death of Abram F. Bosson, loses an esteemed member and officer, therefore be it

Resolved, That the Institute recognizes the value of the services of the deceased as a promoter of its objects,

particularly in the department of horticulture, in which centred his entire interest. His large contributions to the exhibitions increased the usefulness of this department of the Institute, and thereby enabled the public to enjoy the beautiful flowers which he cultivated with so much care and well founded pride.

Resolved, That the members of the Institute, deeply regretting their loss, desire to express their sympathy to the family and friends of the deceased, and request that a copy of these resolutions be transmitted to them, and be entered upon the records.



REGULAR MEETING, MONDAY, MARCH 17, 1873.

Meeting this evening at 7 30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Jacob Batchelder, Lynn, Meh. 1; William Cogswell, Salem, Meh. 17; Samuel G. Drake, Boston, Meh. 6; Samuel A. Drake, Boston, Meh. 14; J. N. Emery, Beverly, Meh. 11; Gurdon Saltonstall, Boston, Meh. 10; E. Steiten, New York, Meh. 3, 10; M. P. Wilder, Boston, Meh. 6; Buffalo Historical Society, Meh. 13; Gottingen, Die K. Gesellschaft der Wissenschaften, Mar. 1; Rhode Island Historical Society, Meh. 13.

The LIBRARIAN reported the following additions :—

By Donation.

- BOARD OF PUBLIC CHARITIES OF PENN. Third Annual Report of 1872. 1 vol. 8vo. Harrisburg, 1873.
- BUSWELL, E. W., of Boston. Miscellaneous pamphlets, 50.
- BUTLER, B. F., of U. S. House of Rep. Speech in U. S. House of Rep., Feb. 14, 15, 1873. 8vo pamph.
- EDOTE, Rev. HENRY W., of Boston. Discourse given in King's Chapel, Boston, Dec. 21, 1871, by donor. 8vo pamph.
- GIRARD, DR. CHAS., of Paris. Principes de Biologie à la Médecine, by donor. 32mo pamph.
- HALE, CHAS. R., of Auburn, N. Y. Miscellaneous pamphlets, 3.

- JAMES, THOS. P. Journal of a Botanical Excursion, by F. Pursh. 12mo pamph. Phila. 1869.
- LEE, JOHN C. Commercial Bulletin for Feb. 8, 15, 22, March 1, 8, 1873.
- PUTNAM, F. W. Miscellaneous pamphlets, 28.
- SMITH, N., of Pembroke. Annual Report of the School Committee of the Town of Pembroke. 1872-3. 8vo pamph.
- STEPHENS, W. H., of Lowville, N. Y. Miscellaneous Catalogues, 15.
- STONE, E. M., of Providence, R. I. Thirty-first Annual Report of the Ministry at Large, Feb. 3, 1873. 8vo pamph.
- SUMNER, CHAS., of U. S. S. Reports in the Senate of U. S. 3d Sess., 42d Cong., Feb. 20, 1873. 8vo pamph.
- U. S. PATENT OFFICE, Washington, D. C. Official Gazette, Jan. 28, Feb. 4, 11, 1873.
- VASSAR, Rev. T. E., of Lynn, Mass. Address at the Funeral Services of James M. Nye, M. D., by donor. 8vo pamph. 1872.
- WILDER, M. P., Boston. Lecture on the Hybridization of Plants, by donor. 8vo pamph. 1872. California, by donor. 8vo pamph.

By Exchange.

- ACADEMIE IMPÉRIALE DES SCIENCES, BELLES-LETTRES ET ARTS, DE LYON. Mémoires, Classe des Sciences. Tome xviii, 1870-71. 8vo pamph.
- INSTITUT NATIONAL GENEVOIS IN GENEVÉ. Bulletin, No. 36, Vol. xvii, pp. 1-216. 12mo pamph.
- KÖNIGLICH BAYERISCHEN AKADEMIE DER WISSENSCHAFTEN, ZU MÜNCHEN. Sitzungsberichte d. philos., Classe 1871, Heft 1-6, 1872, Heft 1-3. Sitzungsberichte, d. Math., Classe 1871, Heft 3, 1872. Inhaltsverzeichniss, zu 1860-1870. 8vo pamph.
- MINNESOTA HISTORICAL SOCIETY. Collections. Vol. i, 1850-56. 1 vol. 8vo.
- NATURFORSCHENDE GESELLSCHAFT IN DANZIG. Schriften, Neue Folge. Band iii, Heft 1, 1872. 8vo pamph.
- NEW JERSEY HISTORICAL SOCIETY. Proceedings. Vol. iii, 2d Series, 1873. No. ii.
- SENCKENBERGISCHE NATURFORSCHENDE GESELLSCHAFT, ZU FRANKFORT à M. Bericht, 1871-72. 8vo pamph.
- SOCIÉTÉ D' ACCLIMATATION ZU PARIS. Bulletin Mensuel, Tome ix, 2 me Série, No. II, 1872. 8vo pamph.
- SOCIÉTÉ D' AGRICULTURE D' HISTOIRE NATURELLE ET DES ARTS UTILES IN LYONS. Annales, 4th Series, II Tome, 1866. 8vo pamph.
- SOCIÉTÉ D' AGRICULTURE, SCIENCES ET ARTS DE LA SARTHE ZU LE MANS. Bulletin, Tome xiii, 1871-72. 2 pamphlets. 8vo.
- SOCIÉTÉ D' ANTHROPOLOGIE IN PARIS. Bulletins, Tome vi, Nov., Dec., 1871. Tome xvii, Jan.-Apr., 1872. 4 pamphlets. 8vo.
- SOCIÉTÉ DE PHYSIQUE ET D' HISTOIRE NATURELLE IN GENÈVE. Mémoires, Tome xxii, 2d pt., 1872. 4to pamph.
- SOCIÉTÉ LINNEEENDE DE LYON. Annales, Années, 1870-71. (Nouvelle Séries.) Tome xviii. 8vo pamph.
- VEREIN FÜR NATURKUNDE IN WIESBADEN. Jahrbücher, Jahrg. xxv, xxvi, 1871-72. 8vo pamph.
- PUBLISHERS. American Journal of Science. American Naturalist. Francis's Catalogue. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Observer.

The following paper was received from Mr. HAROLD HERRICK of New York :—

A PARTIAL CATALOGUE OF THE BIRDS OF GRAND MENAN, N. B.

GRAND MENAN, the point at which these notes were made, being situated at the mouth of the Bay of Fundy, about ten miles from the coasts of Maine and New Brunswick and twice that distance from Nova Scotia, possesses one of the most interesting faunæ of the Atlantic coast, forming, as it were, a neutral ground upon which stragglers from our southern districts mingle with those of more Arctic birth, and unite to form a local fauna of considerable extent and great interest.

The island is about twenty miles long by five wide. On its western side, for about twelve miles, the surface slopes gently to the shore and is well settled, but all the rest of the coast from the "Southern Head" to the "Swallow-tail Light," is one continuous line of precipitous cliffs, rising perpendicularly to the height of from two to six hundred feet, and broken only by an occasional swale through which pours some miniature torrent. The interior is composed of dense forests of spruce and pine, alternating with alder swamps and heaths of Labrador Tea, the latter the chosen abiding place of thousands of *Lepus Americanus*.

Lying off from Grand Menan are numerous small islands, where the sea-birds breed and have bred, to some considerable extent, since the memory of man. Among the chief of these islands are :—Green, White-horse, Ross, Two, Three and Whitehead islands. But these beloved nesting-places are being gradually broken up, and the persecuted birds are either retiring farther north, or are betaking themselves to the inaccessible cliffs where they cannot be molested.

Audubon was the first student of nature who ever explored the wild and rocky shores of Menan, and he, it seems, not very thoroughly. I believe no catalogue of its local birds has ever been published. Mr. G. A. Boardman's list of "Birds of Calais and Islands in the Month of the Bay of Fundy," gives many species that are to be found at Calais, though a number of them never occur on Menan.

The following catalogue and annotations are the result of two visits to the island, one in May, 1871, the other during June, July and August, 1872. I must in this connection acknowledge my indebtedness to Mr. S. F. Cheney, of Grand Menan, for his universal kindness and for the great aid he tendered me, in procuring many valuable specimens; also for much useful information. I cannot but recommend him to all who may contemplate a visit to the island, either for recreation or study, as one who will give all the assistance in his power, and make their stay as enjoyable as possible.

TURDIDÆ.

1. *Turdus migratorius*. Robin. Very common and breeds abundantly, nesting about June 5.

2. *Turdus Pallasii*. Hermit Thrush or Cathedral Bird. It is common and breeds. The song of this species, as well as that of the succeeding, is here very full and strong.

3. *Turdus Swainsonii*. Olive-backed Thrush. Quite common; breeds. I was fortunate enough to secure a fine nest and complement of three eggs, June 21. *T. fuscescens* very possibly occurs, but was not noted.

SAXICOLIDÆ.

4. *Sialia sialis*. Bluebird. Rare. I took none, but saw the remains of a specimen that had been shot July 20. This must be its eastern limit, as it is as rare on the main shore as here.

PARIDÆ.

5. *Parus atricapillus*. Chickadee. Very common. Breeds abundantly.

6. *Parus Hudsonius*. Hudsonian Titmouse. Not very common; only two were noted. It probably breeds in the dense forests. The only specimen captured was among a large flock of *P. atricapillus*, and was first noticed from its exceedingly loud note, which is much harsher, shriller and more quickly given than *P. atricapillus*.

SITTIDÆ.

7. *Sitta Canadensis*. Red-bellied Nuthatch. Common; breeds.
8. ^{9.} *Sitta Carolinensis*. White-bellied Nuthatch. Rare.

CERTHIIDÆ.

9. *Certhia familiaris*. Brown Creeper. Not common; breeds.

TROGLODYTIIDÆ.

10. *Troglodytes hyemalis*. Winter Wren. Common; breeds. Its superb song is here heard to the utmost advantage, in the solitudes of its native forests and in the tangled and almost impenetrable swamps. *Troglodytes adon* may occur.

MOTACILLIDÆ.

11. *Anthus Ludovicianus*. Titlark. Occurs in spring and fall, but does not breed.

SYLVIIDÆ.

12. *Regulus calendulus*. Ruby-crowned Wren. Common in spring and fall, but passes to the north to breed.
13. *Regulus satrapa*. Golden-crowned Wren. Common; breeds. I was unable to discover any nests, although I could see, by the actions of the parents, that they had young near by.

SYLVICOLIDÆ.

14. *Mniotilla varia*. Black and White Creeper. Rather uncommon; breeds.
15. *Parula Americana*. Blue Yellow-back. Rare. I took a single specimen in May.
16. *Geothlypis trichas*. Maryland Yellow-throat. Exceedingly common. Breeds in abundance in all the heaths of Labrador Tea. A nest taken June 20 was composed largely of feathers of *Larus argentatus*.
17. *Helminthophaga ruficapilla*. Nashville Warbler. Common; breeds.
18. *Helminthophaga peregrina*. Tennessee Warbler. Not rare; breeds.

19. *Dendroica virens*. Black-throated Green Warbler. Common; breeds, frequenting the thick spruces.

20. *Dendroica Canadensis*. Black-throated Blue Warbler. Rare; may breed.

21. *Dendroica Pensylvanica*. Chestnut-sided Warbler. Rare.

22. *Dendroica coronata*. Yellow rump Warbler. Very common; breeds.

23. *Dendroica Blackburniae*. Blackburnian Warbler. Rare; may breed.

24. *Dendroica striata*. Black Poll. The most common warbler; breeds everywhere, but I was not fortunate enough to take a nest.

25. *Dendroica castanea*. Bay-breasted Warbler. Rare; may breed.

26. *Dendroica aestiva*. Yellow Warbler. Rare. I took but three birds and one nest.

27. *Dendroica maculosa*. Magnolia Warbler. Common. On June 27th I took a nest containing four fresh eggs, with advanced embryos. It was in a small spruce, not more than two feet from the ground, on the edge of a heath, and was very slightly built.

28. *Dendroica palmarum*. Yellow Red-poll. Not common, and does not breed.

29. *Dendroica tigrina*. Cape May Warbler. Rare; may breed.

30. *Sciurus aurocapillus*. Golden-crowned Thrush. Quite rare; probably breeds. I took but one. *S. Noveboracensis* may occur.

31. *Myiobius pusillus*. Green Black-capped Flycatcher. Rare. I do not think it breeds.

32. *Myiobius Canadensis*. Canada Flycatcher. Rare; may breed.

33. *Setophaga ruticilla*. Redstart. Very common; breeds.

HIRUNDINIDÆ.

34. *Hirundo horreorum*. Barn Swallow. Common; breeds.

35. *Hirundo lunifrons*. Eave Swallow. Common; breeds.

36. *Hirundo bicolor*. White-bellied Swallow. Common; breeds.

37. *Cotyle riparia*. Bank Swallow. Common; breeds.

38. *Progne subis*. Purple Martin. Rare on Menan but very common on the Maine coast.

VIREONIDÆ.

39. *Vireo olivaceus*. Red-eyed Vireo. Rare; may breed.

AMPELIDÆ.

40. *Ampelis cedrorum*. Cedar Bird. Very common summer resident.

LANIDÆ.

41. *Collurio borealis*. Great Northern Shrike. Common in winter, but does not breed.

FRINGILLIDÆ.

42. *Pinicola Canadensis*. Pine Grosbeak. Not rare in winter.

43. *Carpodacus purpureus*. Purple Finch. Common.

44. *Chrysomitris tristis*. Goldfinch. Common during July and August, but does not breed. The flocks appeared to be passing to and fro between Maine and Nova Scotia.

45. *Chrysomitris pinus*. Pine Finch. Rather uncommon; may breed.

46. *Curvirostra Americana*. Red Crossbill. Not rare; probably breeds in the thick woods. I took it in August.

47. *Curvirostra leucoptera*. White-winged Crossbill. Not rare in winter.

48. *Eagothus Linarius*. Redpoll. Common in winter.

49. *Plectrophanes nivalis*. Snow Bunting. Common in winter.

50. *Plectrophanes Lapponicus*. Lapland Longspur. Occurs in winter.

51. *Passerulus savanna*. Savannah Sparrow. Breeds everywhere. I took numerous nests.

52. *Zonotrichia albicollis*. White-throated Sparrow. Common; breeds plentifully.

53. *Zonotrichia leucophrys*. White-crowned Sparrow. Occurs during migrations.

54. *Junco hyemalis*. Black Snowbird. Very common; breeds everywhere.

55. *Spizella monticola*. Tree Sparrow. Occurs in autumn.

56. *Melospiza melodia*. Song Sparrow. Rather uncommon. I took but one nest and three or four birds.

57. *Melospiza palustris*. Swamp Sparrow. Not rare; breeds.

58. *Passerella iliaca*. Fox Sparrow. Occurs during migrations, but does not breed.

59. *Guiraca Ludoviciana*. Rose-breasted Grosbeak. Very rare. I took a fine ♂ May 16, but saw no more. Mr. Cheney never noticed it before.

60. *Guiraca carulea*. Blue Grosbeak. In the spring of 1861, Mr. Cheney shot a fine ♂ specimen and sent it to G. A. Boardman, Esq., in whose cabinet it now is.

ALAUDIDÆ.

61. *Eremophila alpestris*. Shore Lark. Occurs plentifully in winter.

BULLETIN

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REGULAR MEETING, MONDAY, MARCH 17, 1873.

A PARTIAL CATALOGUE OF THE BIRDS OF GRAND MENAN, N. B.

[Continued.]

ICTERIDÆ.

62. *Agelaius phoeniceus*. Red-winged Blackbird. Has been noticed by Mr. Cheney, but does not breed.

63. *Quiscalus versicolor*. Crow Blackbird. Occurs, but is rare. Others of this family may occur, as they are found on the mainland, but they cannot be common here, else they would have been noted.

CORVIDÆ.

64. *Corvus cornifrons*. Raven. Very common; breeds in abundance, placing its nest indiscriminately on the trees or on the cliffs. The same nest is frequented for many years. The eggs are deposited about the 10th of March. These birds are universally hated; and in truth it is no vulgar prejudice, for they are very destructive, especially to young lambs; and no chance is lost of shooting them, so that with all their proverbial vigilance, they annually decrease. The 12th of June I found an enormous nest on the outer Wood Island. It was placed on the cliff so as to be perfectly inaccessible, and contained four fully fledged young, two of which were dislodged by the plentiful use of stones. The nest in itself is a curiosity worth seeing and would make no mean load for a horse to draw. It had evidently been

the home of many broods of young plunderers, and probably will continue to be for some time to come, and a wild enough home it is, with no sound but the roar of the surf below and the harsh scream of the gull above.

65. *Corvus Americanus*. Crow. Here as elsewhere common; breeds abundantly. I think the eggs collected here are of a darker color and more intensely spotted than those collected further south. In fifty specimens obtained, there was scarcely a light example, while in the same number from Long Island or New Jersey there would be a very large percentage of light and sparsely spotted specimens.

66. *Cyanurus cristatus*. Blue Jay. Common; breeds.

67. *Perisoreus Canadensis*. Canada Jay. Not rare in winter; it may breed in the thick woods and swamps, but was not noted.

TYRANNIDÆ.

68. *Tyrannus Carolinensis*. Kingbird. Common during early June, but by the 20th all had passed over to the mainland. This seems rather strange as there is no obvious reason why Grand Menan should not afford as good facilities for the breeding of this species as New Brunswick or Nova Scotia.

69. *Contopus virens*. Wood Pewee. Not rare; breeds.

70. *Eumipidonax Traillii*. Traill's Flycatcher. Rather common summer resident, but extremely difficult to procure, because of its retiring habits. Its note is frequently heard in the alder swamps, but it is a rare occurrence to see one.

71. *Eumipidonax flaviventris*. Yellow bellied Flycatcher. Rare; probably breeds. I took but a single specimen.

ALCEDINIDÆ.

72. *Ceryle alcyon*. Kingfisher. Not common. I did not meet with it breeding.

CAPRIMULGIDÆ.

73. *Chordeiles popetue*. Night Hawk. Common; breeds. *A. vociferus* may occur, as it is given by Boardman as a summer resident at Calais.

CYPSELIDÆ.

74. *Chartura pelasgia*. Chimney Swallow. Not common; breeds.

TROCHILIDÆ.

75. *Trochilus columbris*. Ruby-throated Hummingbird. This hardy little wanderer is not uncommon in this cold and bleak region, where birds of stronger flight and harder growth do not venture.

CUCULIDÆ.

76. *Coccyzus erythrophthalmus*. Black-billed Cuckoo. Common; breeds. I took a nest, containing three fresh eggs, July 10. *C. Americanus* may occur, as it is given as common at Calais (Boardman).

PICIDÆ.

77. *Picus pubescens*. Downy Woodpecker. Common; breeds.

78. *Picus villosus*. Hairy Woodpecker. Not rare; breeds.

79. *Picoides arcticus*. Three-toed Woodpecker. Not rare in winter; may breed on the back of the island in the heavy timber, where few persons ever go. *P. hirsutus* probably occurs in winter.

80. *Sphyrapicus varius*. Yellow-bellied Woodpecker. Not common; may breed.

81. *Colaptes auratus*. Golden-winged Woodpecker, called here the Wood Pigeon. Very common; breeds.

STRIGIDÆ.

82. *Bubo Virginianus*. Great Horned Owl. Occurs in the forests, but is not often seen.

83. *Scops asio*. Mottled Owl. Common; breeds.

84. *Otus Wilsonianus*. Long-eared Owl. Rather common during summer. I got a set of fresh eggs from Whitehead Island, May 24, 1871.

85. *Brachyotus Cassini*. Short-eared Owl. Not rare. I secured a set of eggs from the same locality as the preceding.

86. *Syrnium cinereum*. Great Gray Owl. Occurs in winter.

87. *Nyctea nirea*. Snowy Owl. Very common in winter; remains till late in spring.

88. *Surnia ulula*. Hawk Owl. Rather rare; probably breeds, as its eggs have been taken at Calais (Boardman). *S. nebulosum* and *N. acadica* probably occur.

FALCONIDÆ.

89. *Falco anatum*. Duck Hawk. Common; breeds on the cliffs, but in such inaccessible situations that its nest is rarely taken. There is a place between "Fish Head" and the "Old Bishop" known as the "Seven Days' Work," where the cliff is divided into seven strata as sharply defined as lines of masonry. On an indentation in the face of this cliff, about one hundred feet from the top, and one hundred and fifty feet from the bottom, a pair of these falcons have had their eyry for a succession of years; secure alike from the assaults of the most zealous naturalist and the small boy of bird's-egging proclivities.

90. *Hypotriorchis columbarius*. Pigeon Hawk. Not rare.

91. *Falco sparver*. Jerfalcon. Mr. Cheney has observed this superb falcon during winter.

92. *Tinnunculus sparverius*. Sparrow Hawk. Observed on Nantucket Island, near Menan.

93. *Astur atricapillus*. Goshawk. Not rare; probably breeds.

94. *Accipiter fuscus*. Sharp-shinned Hawk. Common; breeds. I secured a nest of four eggs from Whitehead Island.

95. *Buteo borealis*. Red-tailed Hawk. Not rare.

96. *Buteo lineatus*. Red-shouldered Hawk. Not rare.

97. *Archibuteo lagopus*. Rough-legged Hawk. Common; may breed.

98. *Circus Hudsonius*. Marsh Hawk. Very common; breeds abundantly in the heath, and subsists largely upon the young of *Lepus Americanus*. I took several nests.

99. *Pandion Carolinensis*. Fish Hawk. Not very common; perhaps breeds.

100. *Aquila Canadensis*. Golden Eagle. Given as rare (Boardman).

101. *Haliaetus leucocephalus*. Bald Eagle. Very common resident. On Feb. 20 Mr. Cheney found a nest in a tall pine, upon the main island; he ascended with some difficulty, and after digging a hole through the nest, secured the only egg it contained. The embryo was well advanced, but frozen. The parents did not attempt to molest him, but confined their demonstrations to sailing overhead at a respectful distance. The egg, now in my cabinet, is of a dirty white color, and measures three inches by two and thirty hundredths.

COLUMBIDÆ.

102. *Ectopistes migratorius*. Wild Pigeon. Not rare; said to breed in the interior of the island.

TETRAONIDÆ.

103. *Bonasa umbellus*. Ruffed Grouse. Rare. At North Head, June 29. I flushed a fine ♂, but was unable to shoot him; I was sorry for this, as the inhabitants insist that the grouse is never found on Menan.

CHARADRIIDÆ.

104. *Charadrius Virginicus*. Golden Plover. Rare.

105. *Egialitis melanotos*. Piping Plover. Given by Boardman as breeding on the islands in June. I did not meet with it, although I searched carefully.

106. *L. semipalmatus*. Ringneck Plover. Common; some breed.

SCOLOPACIDÆ.

107. *Philohela minor*. Woodcock. Rather rare; breeds in the thick alder swamps.

108. *Gallinago Wilsonii*. Wilson's snipe. Rare.

109. *Macrorhamphus griseus*. Red-breasted Snipe. Common in July.

110. *Pelidna Americana*. Red-backed Sandpiper. Not common.
111. *Erolotes pusillus*. Semipalmated Sandpiper. Very common during August. One day while in pursuit of plover, I killed, at a single discharge, twenty-six from a passing flock.
112. *Tringa canutus*. Robin Snipe. Rather rare during summer.
113. *Arquata maritima*. Purple Sandpiper. Very common in winter, immense flocks frequenting the stony beaches. In summer, rare. I took a single specimen, Aug. 13, among a large flock of *E. pusillus*.
114. *Actodromus minuta*. Least Sandpiper. Very common in August.
115. *Sympheon semipalmata*. Willet. Rather common in August. The old men tell about a bird they call a "Tinkasheer" that used to breed in abundance on Menan fifty years ago, and from their description it seems to be identical with the species in question.
116. *Gambetta melanoleuca*. Winter Yellow Legs. Common.
117. *Gambetta flavipes*. Summer Yellow Legs. Common.
118. *Rhyacophilus solitarius*. Solitary Sandpiper. Common.
119. *Tringoides macularius*. Spotted Sandpiper. Common; breeds everywhere.
120. *Philomachus pugnax*. Ruff. Given by Boardman.
121. *Limosot Hudsonica*. Hudson Godwit. Mr. Cheney sent me a pair that he shot in November, 1871. They were the only ones he ever saw.
122. *Numenius borealis*. Esquimaux Curlew. Rare.
123. *N. longirostris*. Long-billed Curlew. Not rare in autumn.
124. *N. Hudsonicus*. Short-billed Curlew. Rare during migrations.

HÆMATOPODIDÆ.

125. *Strepsilas interpres*. Turnstone. Not rare in August.

PHALAROPODIDÆ.

126. *Phalaropus hyperboreus*. Northern Phalarope, "Sea Goose." Very common. Thousands may be seen all summer on the "Rippings" about eight miles from Menan, where they congregate to feed on the shrimp and animalculæ that are drifting in the eddies made by the advancing and receding tide. They never come on shore unless driven by storms, and are so tame, especially in foggy weather, that I have almost run them down with a sail boat. *P. Wilsonii* and *fulicarius* probably occur.

ARDEIDÆ.

127. *Ardea herodias*. Great Blue Heron. Common; but I did not find it breeding.
128. *Buteo lentiginosus*. Bittern. Rather rare.
129. *Butorides virescens*. Green Heron. Not rare; it may breed, but I do not think it does.

ANATIDÆ.

130. *Anser hyperboreus*. Snow Goose. Rare in winter.
131. *Berinia Canadensis*. Canada Goose. Common in spring and fall; bred abundantly in years past.
132. *Berinia branta*. Brant. Common during migrations.
133. *Anas boschas*. Mallard. Very rare.
134. *Anas obscurata*. Black Duck. Common; breeds.
135. *Dafila acuta*. Pintail. Rare.
136. *Nettion Carolinensis*. Green-winged Teal. Common.
137. *Querquedula discors*. Blue-winged Teal. Rare.
138. *Mareca Americana*. Widgeon. Rare.
139. *Spatula clypeata*. Shoveller. Rare.
140. *Chenetasmus streperus*. Gadwall. Rare.
141. *Aix sponsa*. Summer Duck. Rather rare.
142. *Fulix marila*. Greater Black-head. Uncommon.
143. *Fulix affinis*. Lesser Black-head. Common.
144. *Aythya Americana*. Red-head. Not uncommon.
145. *Aythya rufisuria*. Canvas-back. Rare.
146. *Bucephala Americana*. Golden-eye. Common in winter.
147. *Bucephala albeola*. Buffle-head. Very common in winter.
148. *Bucephala islandica*. Barrow's Golden Eye. Rare.
149. *Histrionicus torquatus*. Harlequin Duck. Common in winter. It is noted, among gunners, for its diving propensities, it being almost impossible to shoot one sitting on the water, as they go under at the flash. I do not think it breeds now, although it may have done so in years past.
150. *Harelda glacialis*. Old Squaw. Very common in winter; may breed, as I saw a pair in full breeding plumage, that had been shot June 18. They would scarcely have been about at that late day without having a nest on one of the islands.
151. *Campylomma Labradorius*. Labrador Duck. Very rare. I received a ♀ from Mr. Cheney, that had been shot in April, 1871.
152. *Melanetta velutina*. Velvet Duck. Common in winter. A few remain all summer.
153. *Pelionetta perspicillata*. Surf Duck. Common in winter. One day in June a specimen alighted in the yard of a house on Whitehead Island, and was captured alive.
154. *Oidemia Americana*. Scoter. Common in winter.
155. *Somateria mollissima*. Eider Duck. This is the most common of all the ducks, breeding in abundance on all the small islands about Menan, but it is fast decreasing, as not one bird in three raises any progeny, because of the continued depredations of the islanders, who rightly esteem their eggs as a great delicacy, and collect them as fast as laid. Their eggs are easily found, because of the careless manner

in which the nest is placed, an old gull's nest, with the addition of a little down, often being made to answer in place of a more elaborate structure. I saw the young, in companies of fifteen or twenty, following their parents, in the beginning of August.

156. *Somateria spectabilis*. King Eider. Rare.
157. *Erisomura rubida*. Ruddy Duck. Uncommon.
158. *Mergus Americanus*. Sheldrake. Common.
159. *Mergus serrator*. Red-breasted Merganser. It used to breed but has almost entirely left the island during the season of incubation, those remaining being only immature or unproductive birds.

160. *Lophodytes cucullatus*. Hooded Merganser. Not common and does not breed.

PELECANIDÆ.

161. *Pelecanus erythrorhynchos*. American Pelican. A specimen was taken some years since.

SULIDÆ.

162. *Sula bassana*. Gannet. It was once common and used to breed on the "Gannet Rock," but since the lighthouse has been built, the Gannets have left. The only instance in which I found it was near Dark Harbor, on back of Menan, where one solitary individual was sitting like a sentinel on a piece of the wreck of the steamer New England, that had gone to pieces on the Wolf Islands, some days before.

PHALACROCORACIDÆ.

163. *Graculus carbo*. Common Cormorant. Occurs in spring and fall.
164. *Graculus dilophus*. Double-crested Cormorant. Occurs, but does not breed now; probably it did once.

PROCELLARIIDÆ.

165. *Procellaria leucorrhoa*. Leach's Petrel. Very common and breeds by thousands on the Green and Whitehorse Islands, where the soil is so impregnated with its peculiar odor, that it is quite perceptible some distance to leeward on a windy day. They deposit their single egg about the 8th of June, incubate from four weeks to a month and if robbed will lay three times. Mr. Cheney has assured me that once, while duck shooting on Green Island on November 10, his dog dug out a young petrel still in the down, when all the other summer visitors had departed for more southern regions. Though so elegant and graceful a bird on the water, this petrel seems to lose all understanding and power on land, and when dug from its hole prefers to skulk away in the grass to taking flight; and may even be thrown like a ball from one person to another. It breeds in such astonishingly large communities that it is nothing of a feat to dig four or five hundred eggs in a single day; but the most energetic oölogist would scarcely undertake a second day's work, as the first would have worn

off his finger-nails, and demoralized his hands and arms to such an extent that he would gladly stay at home and blow his eggs.

166. *Oceanites oceanicus*. Wilson's Petrel. Occurs on the fishing grounds, but does not breed.

167. *Procellaria glacialis*. Fulmer. Occurs on the fishing grounds in autumn.

168. *Nectris fuliginosus*. Sooty Shearwater. This species and the two succeeding are given by Boardman, but were not noted by myself.

169. *Puffinus major*. Greater Shearwater. Haglin.

170. *Puffinus angulum*. Mank's Shearwater. Black Haglin.

LARIDÆ.

171. *Stercorarius pomatorhinus*. Pomarine Jaëger. Common in autumn on the fishing grounds.

172. *Stercorarius parasiticus*. Arctic Jaëger. Common fall visitor; comes about the fishing boats to pick up bits of bait, and is so tame that it is often killed with a gaff.

173. *Stercorarius cephus*. Buffon's Jaëger. "Marlin-spike Bird." "Common in the Bay of Fundy in August" (Boardman).

174. *Larus glaucus*. Burgomaster. Winter resident.

175. *Larus Hatchinsi*. Hutchins' Gull. I have a fine specimen of this rare gull, killed by Mr. Cheney's son in January, 1872. It corresponds exactly with a specimen, in the cabinet of G. N. Lawrence, Esq., that was shot on Long Island.

176. *Larus leucopterus*. White-winged Gull. Noted by Dr. Brewer.

177. *Larus marinus*. Great Black-backed Gull. Common winter resident; used to breed with the Herring Gulls, but being of a wilder nature it was the first to move in the direction of new and more secure breeding grounds.

178. *Larus argentatus*. Herring Gull. Very abundant and breeds on almost all the islands, in every situation, from the open heath to the ragged and precipitous cliff. On the Southern Head is a very extensive nursery, and from the edge of the cliffs the eggs can be counted by the hundred, all the way down, until they grow indistinguishable in the distance. But little effort is made to secure these eggs, as of late years it has been rightly deemed too dangerous an undertaking to descend the cliffs, even with the aid of a rope. I know of at least one adventurous climber who met with a fearful death in consequence of his temerity. The present inhabitants of the island can remember when it was an easy thing to go out and collect four or five hundred eggs in an afternoon; but, alas! those times are no more and unless something is done, and that soon, to prevent the promiscuous destruction of these useful birds, gulls' egging at Grand Menan

will be among the things of the past; for though to a stranger the eggs seem so abundant, the inhabitants represent them as few compared with the myriads of former years.

179. *L. Delawareensis*. Ring-billed Gull. Common during migrations.
180. *Chroicocephalus atricella*. Laughing Gull. Given as breeding by Boardman.
181. *Chroicocephalus Philadelphia*. Bonaparte's Gull. Common in autumn.
182. *Rissa tridactyla*. Kittiwake. Common in winter but does not breed, which is curious, as the cliffs afford most excellent nesting-places.
183. *Pagophila eburnea*. Ivory Gull. Winter visitant.
184. *Sterna Wilsoni*. Wilson's Tern. Breeds on the Seal islands.
185. *Sterna macroura*. Arctic Tern. Rather rare. Others of this family probably occur, but are not recorded.

COLYMBIDÆ.

186. *Columbus torquatus*. Loon. Common about the islands, but does not breed.
187. *C. arcticus*. Black-throated Diver. Occurs in winter.
188. *C. septentrionalis*. Red-throated Diver. Winter resident.
189. *Podiceps griseigena*. Red-necked Grebe. Rather common. *P. cristatus* and *podiceps* may occur, as they have been noted at Calais.

ALCIDÆ.

190. *Alca torda*. Razor-billed Auk. This bird is still common about the Mure rocks and Seal islands, where it breeds without much molestation. A curious circumstance connected with the breeding of this species here is that it never associates with *Uria grylle*, but is sole occupant of these two places, which seem to afford as advantageous nooks and crannies to the Guillemot as to the Ank. The only explanation is that the Razor-bills drive them away.

191. *Alca impennis*. Great Auk. Formerly occurred, as bones have been dug from the shell-heaps of Nantucket island, close to Menan.

192. *Uria grylle*. Black Guillemot. Common yet, but is doomed to extinction; as are all the sea-birds that still haunt these old breeding places, each spring seeing fewer birds come back to breed than went away in the fall.

193. *Uria lomvia*. Foolish Guillemot. Common in winter, but never breeds.

194. *Mergulus alle*. Sea-dove. Common winter resident, but none stop to breed.

TWENTY-FIFTH ANNIVERSARY,

WEDNESDAY, MARCH 5, 1873.

DURING the winter of 1872-3, at several meetings of the Essex Institute, the matter of the proper celebration of the twenty-fifth anniversary of the Society was discussed, and as the outcome of these deliberations, the matter was put into the hands of a committee, with full powers. The committee consisted of H. Wheatland, A. C. Goodell, Jr., Wm. Sutton, F. W. Putnam, D. B. Hagar, A. H. Johnson, John Robinson, James O. Safford, E. S. Atwood, E. C. Bolles, G. D. Phippen, Joshua Coit, George M. Whipple, Caleb Cooke, Wm. Neilson.

The various sub-committees were chosen as follows:—

On Invitations, A. C. Goodell, Jr., E. S. Atwood, D. B. Hagar, H. Wheatland, E. C. Bolles.

On Finance, William Neilson, J. O. Safford, A. C. Goodell, Jr., H. Wheatland.

On Decorations, John Robinson, C. Cooke.

On Banquet, A. C. Goodell, Jr., E. S. Atwood, A. H. Johnson, D. B. Hagar, G. M. Whipple.

On Printing, F. W. Putnam, J. O. Safford, Henry Wheatland.

Weekly meetings of the committee, for the comparison of views and the perfecting of plans, were held at the houses of various members, and arrangements were finally made for a literary festival and banquet at Plummer Hall on the evening of March 5, 1873. Invitations were sent to various gentlemen of high literary and scientific repute, and tickets were issued to members and their friends at five dollars each.

About seven o'clock the members and invited guests

assembled in the upper hall of the Institute building. The beauty and talent of the city were well represented. Among the distinguished invited guests, most of whom were present, were his Excellency the Governor; President Loring of the Senate; Speaker Sanford of the House; his Honor Mayor Cogswell; Hon. R. C. Winthrop, President of Massachusetts Historical Society; Hon. Stephen Salisbury, President of American Antiquarian Society; Prof. Asa Gray, President of American Academy of Arts and Sciences; Hon. Marshall P. Wilder, President of the New England Historic-Genealogical Society; T. T. Bouv , President of the Boston Natural History Society; J. D. Runkle, President of the Massachusetts Institute of Technology; William Wood, M. D., President of the Portland Society of Natural History; O. C. Marsh, Professor of Palaeontology in Yale College; Nathaniel Paine, President of the Worcester Natural History Society; President Eliot and Professors Agassiz, Pierce and Loveling of Harvard University; John G. Whittier; E. H. Chapin, D. D., of New York, and others.

After the guests had assembled and a short time had been spent in social intercourse, the company proceeded to the lower hall, which had been fitted up as a banqueting room. Three tables extended through the entire length of the hall, at the heads of which were seated Vice Presidents Wm. Sutton, A. C. Goodell, Jr., and F. W. Putnam, and at right angles to these, on the platform, a table was spread for the invited guests. In the alcoves, to the right and left of the guest table, were spread tables for the reporters. The hall had been tastefully decorated under the direction of Messrs. John Robinson and Caleb Cooke. On the gallery front, over the guest table, was a white tablet, bordered with green, with the inscription in box and brilliant autumn leaves,

1848—E. I.—1873. Running round the gallery front, over each alcove, were similar tablets, bearing the names of the Presidents of the Institute, and of the Essex Historical and Essex County Natural History Societies, by whose union the Institute was formed. The names as read round were as follows :—NICHOLS, TUCKER, WHITE, HUNTINGTON, WHEATLAND, PEABODY, PICKMAN, HOLYOKE, RUSSELL. To the right and left of the stage were tablets inscribed: E. H. S.—1821. E. C. N. H. S.—1833. In front of each alcove in the library was suspended a hanging basket filled with growing plants. The columns were wreathed with evergreen, and topped with masses of hemlock. To the right and left of each column were carved brackets, with vases of choice flowers. The fronts of the library cases were covered with material of a pearl gray color, to form a background for pictures. Portraits of Goethe, Humboldt, Hyrtl, Müller, Cuvier, Agassiz, Hawthorne and other eminent men adorned these improvised walls. Ferns and growing plants of every variety were massed wherever there was room to display them. The whole arrangement evinced fine taste and a nice appreciation of the proprieties of the occasion.

The banquet was prepared under the supervision of Mr. Edward Cassell. The tables glittered with elegant china and silver ornaments, relieved by bouquets of exquisite flowers furnished by Francis Putnam and arranged with great taste by W. H. Gardner. The supper, which was of several courses, was served up in the following order :

FIRST COURSE.

Raw Oysters; Escalloped Oysters; Curried Oysters;
Lobster Salad; Chicken Salad.

SECOND COURSE.

Filet de Bœuf; Sweetbreads; Pâté of Chicken; Tongue.

THIRD COURSE.

Boned Turkey; Grouse; Quail; Partridge; Fowls.

FOURTH COURSE.

Frozen Pudding; Charlotte Russe; Tom Thumb;
Bon Glace; Wine Jelly.

FIFTH COURSE.

Ices: Chocolate, Vanilla, Lemon, Pine Apple, Strawberry, Harlequin Fruit.

SIXTH COURSE.

Apples; Oranges; Bananas; Figs; Crystallized Fruits and Nuts.
Cake: Currant, Citron, Pound, Sponge, Cocoanut,
Macaroons, Meringues.
Coffee; Tea.

The number who sat down to the feast must have been not far from one hundred and seventy, and included both ladies and gentlemen.

The company was seated at the table at half past eight, and was called to order by the President, Henry Wheatland, who requested the Rev. E. S. Atwood to offer prayer. After an hour pleasantly spent in discussing the supper in all its bearings, the company being regaled with the choice selections performed by Upton's Quadrille Band, the literary portion of the entertainment was introduced with the following address by the PRESIDENT:—

LADIES AND GENTLEMEN:—We are assembled this evening to commemorate the formation of the Essex Institute in 1848, by the union of the Essex Historical and the Essex County Natural History Societies. It is, perhaps, needless to trace in detail the growth of these institutions; the principal facts in their history having appeared in the printed publications of the Institute.

The occasion, however, suggests many associations that

cannot be passed over in silence; this place and its surroundings are crowded with them—the building—the varied relics—the books—are not without their history, and are continually reminding us of the debt of gratitude we owe to those through whose instrumentality they were obtained.

Some remind us of the Social Club, composed of the leading spirits of the town, that was wont to hold its weekly meetings, during the middle of the last century, at the old Pratt's Tavern, to discuss the topics of the day, especially those of a literary and scientific character. Thence originated the Social Library in 1761.

Others bear the signature of "R. Kirwan," a celebrated Irish chemist, and call to remembrance some of the scenes in the Revolutionary period,—the privateer Pilgrim, its bold and intrepid commander, Hugh Hill, his daring exploits, the capture, in the English Channel, of a schooner having on board a portion of the library of this distinguished chemist, the bringing of these books into the neighboring port of Beverly, the purchase of the same by some seven scientific men of Salem and Beverly,—and hence the origin of the Philosophical Library, in 1781.

The collection of log books and sea journals calls to mind that brilliant commercial career which immediately followed the closing drama of the Revolution, when the sails of our merchantmen whitened every sea, and the products of the most distant climes, "*divitis Indiae usque ad ultimum sinum*," were landed at our wharves. In the midst of this prosperity the navigators in those remote seas organized a society to assist the widows and children of deceased members; to collect such facts and observations as tend to the improvement and security of navigation and to form a museum illustrative of the civil and natural history of the countries visited during their

long and protracted voyages. The nucleus then formed in 1799, by gradual accretions became the world-renowned museum of the East India Marine Society. This museum, and the scientific collections of the Institute, have recently been rearranged in the East India Marine Hall, under the direction of the trustees of the Peabody Academy of Science, and opened to the public, free, six days in the week.

The portraits on these walls, the old reliques in the cabinets, the frame of the first building erected for the first church in Salem, cared for and placed in good condition for preservation by the kindness and liberality of our late President, Francis Peabody, are alike suggestive of topics for consideration; but time will not permit me to dwell longer.

In 1638, Emmanuel Downing, of the Inner Temple, London, came to Salem, where he lived several years in great esteem, often representing the town in the General Court. His dwelling was on or near this spot, in the middle of an estate comprising some four acres. His wife was a sister of Gov. Winthrop. His son George, a lad of about fourteen summers, was preparing, under the tuition of Rev. John Fisk, to enter the college, where he graduated in the first class in 1642. This son then went to England, entered into Cromwell's service and became highly distinguished. Was his (Cromwell's) minister to the Hague, and afterwards held the same situation under Charles II, from whom he received a baronetcy; united with "the blood of all the Howards," by marrying Frances, sister of the first Earl of Carlisle. A grandson, Sir George Downing, dying in 1747, left a large bequest (£150,000) for the founding of Downing College, in Cambridge, England.

Ann, the youngest daughter of Emmanuel, came into

possession of this estate, and the mansion in which she resided was a few rods west of this spot. She first married Capt. Joseph Gardner, who was killed, Dec. 19, 1675, at the great Narraganset Swamp fight, in King Philip's war. Secondly, she married Simon Bradstreet, and there the old Nestor governor of Massachusetts lived and died. The house was then known as the Bradstreet mansion, and was taken down about 1750. Gov. Bradstreet had previously married Ann, daughter of Gov. Thoinas Dudley. She is the most distinguished of the early matrons by her literary powers; a volume of her poems is now extant.

Nearly opposite the last named house, on the western corner of Liberty street, was the residence of Major William Hathorne, who came to Salem in 1636, and from that date his name appears in our records as holding important positions,—Commissioner, Speaker of the House of Representatives, counsel in cases before the courts, judge on the bench, soldier commanding important and difficult expeditions, etc.

Johnson, in his "Wonder-Working Providence," thus says of him: "Yet, through the Lord's mercy, we still retaine among our democracy the godly Captaine William Hathorne, whom the Lord hath imbued with a quick apprehension, strong memory and rhetorick, volubility of speech which hath caused the people to make use of him often in public service especially when they have had to do with any foreign government."

He died in 1681. His son John seemed to have inherited many of his traits of character, and to have succeeded in all his public honors, and held a like prominent position in public affairs till his decease, which occurred in 1717. In an easterly direction, on Union street, in a small two-story gambrel-roofed house, a descendant in the sixth generation was born, in 1804, whose name has

been equally if not more conspicuous in the field of letters than either of his ancestors had been in the civil history of the colony.

A few rods in a northerly direction we find the birth-place of Bowditch, whose "Navigator" is in the hands of every seaman, and who, as translator of La Place's "Mecanique Celeste," is ranked among the leading mathematicians of his age.

The house that was taken down to erect on its site the building in which we are assembled was the place where Prescott, the historian, first saw the light of day; and afterwards, for nearly half a century, it was the residence of one of our most successful and opulent merchants, Joseph Peabody.

In this connection, it is meet that we should pay a tribute of respect to the memory of Miss Caroline Plummer, a lady of great literary culture and refinement, who died in May, 1854, and bequeathed to the proprietors of the Salem Athenæum, the sum of thirty thousand dollars for the erection of a building, to deposit therein the books of the Athenæum, with liberty to have the rooms used for the meetings of literary and scientific societies and for the deposit of works of art and natural productions. If you desire to know in what manner this money has been expended, and ask for her monument, "Circumspice!"

This locality, around which cluster so many associations of exceeding interest to the student in history, the scholar, the scientist, and the general public, seems to be especially adapted for the establishment of an institution for the promotion of literature, science, and the arts. A good beginning has thus far been made,—additional land and more buildings will be requisite to furnish suitable accommodations for its proper management.

Let us resolve, henceforth, that we will not pause in our efforts until this so desirable an object shall have been successfully accomplished. Thus, supplementing the scientific collections in the hall now owned by the trustees of the Peabody Academy of Science, Salem will be well provided with materials for the promotion of general culture and education among her citizens.

A brief allusion to the tablets on the railing, containing the names of the several ex-presidents, may not be inappropriate at this time.

The first in chronological order, EDWARD AUGUSTUS HOLYOKE, M. D., LL. D., President of Essex Historical Society, 1821–1829, graduate of Harvard in the class of 1746, came to Salem in 1749. The first medical charge in his books bears date July 6, 1749; the last Feb. 17, 1829; covering a period of nearly eighty years in the profession at Salem; an active member of the Social Library in 1761; of the Philosophical Library in 1781; and at the time of his death, March 31, 1829, he was President of the Salem Athenaeum, and of the Essex Historical Society; thus interested in the literary and scientific societies in Salem for sixty-eight years. He was an original member of the American Academy of Arts and Sciences, and also of the Massachusetts Medical Society; of both of these societies he had been elected President, of the latter institution the first.

BENJAMIN PICKMAN, President of Essex Historical Society 1829–35, a graduate of Harvard, class of 1784; member of the two houses of our State Legislature, and one term a member of Congress; a merchant, and a liberal friend to our public institutions. He died in 1843.

ICHABOD TUCKER, President of Essex Historical Society, 1835 to 1837; born in Leicester; graduate of Harvard in 1791; commenced the practice of the law in

Haverhill; removed to Salem about 1807; Clerk of the Courts for Essex for upwards thirty years; died in 1846.

DANIEL APPLETON WHITE, President of Essex Historical Society, 1837-48, and President of Essex Institute, 1848-61; born in that part of Methuen now Lawrence; graduate of Harvard in the class of 1797; commenced the practice of the law in Newburyport; removed to Salem in 1815; Judge of the Probate Court of Essex for more than forty years; died in 1861; a fine classical scholar.

ANDREW NICHOLS, President of Essex County Natural History Society, 1833 to 1845, a valued physician; born in the rural part of Danvers he early imbibed a taste for the study of nature, which continued through life. He was very conversant with the local natural history of this vicinity, and took a great pleasure in guiding his young friends to the rural retreats, in quest of some rare floral gems. He lived in South Danvers, now Peabody, and died March 31, 1853.

JOHN LEWIS RUSSELL, President of Essex County Natural History Society, 1845-48, Vice President Essex Institute 1848-61, a graduate of Harvard in the class of 1828, and of the Theological School in Cambridge in 1831, distinguished as a botanist, and especially conversant with our cryptogamic flora. He was also an able and instructive lecturer on the various departments of Natural History, especially in his favorite one, Botany.

ASAHEL HUNTINGTON, President of Essex Institute 1861-65, born in Topsfield; a graduate of Yale in 1819; commenced the practice of the law in Salem; District Attorney, and for many years preceding his death, which occurred Sept. 5, 1871, was the genial and efficient Clerk of the Courts for Essex.

FRANCIS PEABODY, President of Essex Institute 1865-7;

born on the spot where we are now assembled, and with the exception of a few years had resided in this immediate vicinity, always interested in scientific investigations and mechanical industries. He died October 31, 1867.

Before taking my seat, permit me to allude briefly to the status of the two societies at the time of the union. It required considerable hailing and cooing to bring about the desired result, the organization of the two being on an entirely different basis.

The Historical Society always had a small membership. Members were elected; an entrance fee was required; no regular assessment, though occasionally one was levied; rooms never opened to the public at stated times, though persons could obtain access by calling upon the librarian or some officer who was always courteous and ready to grant any favor.

The Natural History Society was on an entirely different basis. Any inhabitant of the county could become a member by signing the constitution and paying the small annual assessment. The rooms were always central and accessible; opened frequently for horticultural and other exhibitions; its aim to make the rooms attractive, thereby to awaken a public interest in furtherance of its objects. The collections increased in value and importance; the membership was enlarged; consequently more available means to extend its operations. The Horticultural Exhibitions, though not an original object, became in course of a few years one of the most important features of the society, and at the time of the union were included as one of the departments. For several years exhibitions were held weekly during the summer months, with the annual in September, and increased in interest with each successive season.

Several nurseries were established, the demand for fruit

trees, and ornamental trees and shrubs increased, and Salem became, as it were, a centre for horticultural operations, and the exhibitions at the metropolis were largely indebted to the Salem gardens for the requisite proportion of fruits and flowers.

This city and vicinity had a goodly array of enthusiastic and successful cultivators of the choicest productions of Flora and Pomona; among them the name of Robert Manning stands prominent, as a pioneer in the cultivation of fruit, especially that of the pear. The garden of Mr. J. F. Allen exhibited for several seasons a fine display of that gorgeous lily "Victoria Regia," and his excellent treatise on that flower, with illustrations, finds a place in every public library. It was also noted for the great variety of grapes and other fruits grown under glass. The gardens and grounds of the Messrs. Putnam, Lee, Cabot, Emerton, Upton, Ives, Bertram, Hoffman, Phippens, Ropes, Bosson, and others, may be mentioned in this connection.

The guiding principles that actuated the Natural History Society were engrafted upon the new organization, and to these what little success it has had may be justly attributed.

For an institution to succeed it is necessary to interest the people in its success, by horticultural and other exhibitions, permanent display of works of art and natural productions, instructive and at the same time attractive lectures, field and other meetings that will combine amusement with instruction, so far as not to compromise its dignity and standing,—having always in view, however, the promotion of the primary and leading objects of its organization. I thank you for your attention to this brief recital of a few thoughts suggested by the occasion.

At the conclusion of his address, the President re-

quested Vice President D. B. HAGAR to officiate as master of ceremonies for the occasion, which he did in his usual graceful manner, and not only were his few opening remarks characterized by wit and pleasantry, but he introduced the various speakers with a very nice savoring of clever things that did much to make the stream of oratory run smoothly.

The Health of Gov. WASHBURN was proposed who responded as follows :—

MR. PRESIDENT, LADIES AND GENTLEMEN :—I am happy to meet you on this interesting occasion. Having been in your city but once during some twenty years, and then for only a few hours, I am to most of you an entire stranger. But your reception has made me feel that I am among friends, and I thank you for this opportunity of an acquaintance with those whom I have learned to honor, not only for their personal qualities, but for the good work in which they are engaged. Not to be somewhat conversant with the early history of Salem is to be ignorant of the history of the Commonwealth. Here was one of the first settlements of the colony of Massachusetts Bay. Hither came Endicott and Winthrop, names foremost among those of our colonial times. Here the former lived and died, and here are still found his direct descendants. Here Roger Williams lived and preached till the people, believing his doctrines injurious to the best interests of the community, compelled him to seek a locality more favorable to his peculiar tenets. This was the home of Story and others who have adorned our judiciary, and some of the most influential members of Congress and the national cabinet have resided here, while time would fail me to mention the names connected with this locality which are favorably known in literature. Neither can I

forget, for I have had it thrown in my face often during the last few years, that this is particularly the place where witches were hung. I know that unmeasured abuse has been heaped upon your ancestors for this fact. They were stern men in their judgments of evil and evil tendencies, and they had stern and swift methods of dealing with those whom they believed dangerous to society and religion. Unquestionably they erred in their treatment of the witchcraft delusions, but I confess to something of admiration for the spirit and moral courage which they displayed. I am aware, also, that for a long period yours was the chief commercial city of the State. While it has lost its position in this regard it is rapidly assuming the characteristics of a manufacturing community, and I trust it may see a thriving and prosperous future. The new and elegant structures which meet our glances on every hand, are tangible evidences of thrift pleasant to observe, and I am glad to notice that some edifices yet remain as monuments of the taste and skill of former generations. Mere outward, physical developments are not, however, what should most be valued in your city ; it is of far more consequence that rare facilities have been and still are afforded for moral and intellectual growth and culture. This indeed is one of the marked peculiarities of our Commonwealth. We are not without internal improvements of which we may be justly proud ; there are abundant witnesses of the energy and enterprise of our people—wharves and warehouses and manufacturing establishments of one kind and another. But these are not the things that have given Massachusetts its chief renown and standing before the world. Partially at least we owe our good name to the qualities which characterized our ancestors, and we shall find that this good name has departed from us when we have fallen

from public and private virtue. The true greatness of a community is in its moral worth. The desire to give our children a better education and better advantages in every respect than we ourselves were permitted to enjoy, to test and make the most of the intellectual and moral powers of every human being—this is an omen of the most encouraging promise. Jealous of each other, jealous of our neighbors, we may be; but what parent is there who is not anxious to secure for his children the privileges that will best fit them for life's duties? Intelligence, earnestness in the search for truth, desire for something purer and better—these are among the real signs of prosperity. That you have not been unmindful of this nobler good I find testified by what I see around me. The twenty-fifth anniversary, which we have assembled to-night to commemorate, is an indication that the improvement of the citizens of Essex has not been neglected. The happy and valuable influence of this society has been felt in every town of the county, and we may reasonably indulge the hope that it will continue to be felt for many long years to come. When I look upon its President, growing gray in his honorable work, and reflect that his power for good is not to be computed by figures, I cannot but wish that some way were devised for retaining the benefit of that power after the machinery which now propels it is worn out. You do wisely in preserving the records of his labor. He will pass away to the great company of those who have given your town its worthy name in our history, but the fruit of his endeavors will live and be perpetuated from generation to generation, not only in these beautiful records, but in the lives and labors of the thousands of young men and young women of Essex who are even now reaping the results of his work. They constitute the new machinery which will preserve and keep

in active use the powers we all honor so much to-day, and thus the years that are to come after we have gone to our reward will find him still a beneficent force in the community.

In response to a toast to the city of Salem, the Mayor, GEN. WM. COGSWELL, spoke as follows :—

I yield to no one in my sympathy with the aims and objects of this Institute, which to-night celebrates and completes its twenty-fifth year of existence. Though a passive rather than an active member of it, I have never failed to watch with interest its doings, and I can bear witness to its success ; and to you, Mr. President, chiefly and above all others, is due the fact that we of a younger generation have seen the coming in, and do now see the going out, of the year which goes to make the first quarter of a century of its existence ; and as some of these gentlemen about me will say that a man who has weathered the storms of twenty-five years of his life is more likely to live another equal term of years than one who has not reached that age, so I believe that this is but one of another and still another, and many more quarter centuries, of an institution dedicated to a higher education and better knowledge of the good old County of Essex.

I cannot refrain from saying again, that whatever measure of success, whatever of advancement, whatever of good, has so far been obtained, is, as it seems to me solely because of the devotion, industry and skill of one whose modesty on this, and on other occasions, is the best indication of the true worth of its possessor. Seldom, sir, is it given to man to see so much of the success of his own good works, as is given to you on this occasion, while it is never given to us to appreciate at their full value such works, until the hand, the heart, the brain which wrought

them out, has passed from among us—a day, in this case, which I pray for your own sake and for our sakes, may be long delayed. But the hour is late; others you await. So far as the City of Salem is concerned, I would thank you for the courtesy you have extended to her on this occasion. She has always watched with pride and satisfaction the onward, upward course of the Essex Institute, an institution which she regards as one of her own, and as among her children; and I feel that I can pledge you notwithstanding the small margin which allows me to speak for her at all, I feel that I can pledge you, certainly, with the consent of the gentleman opposite, the earnest coöperation and best wishes in the cause of science as advanced by the Essex Institute.

Hon. MARSHALL P. WILDER was introduced as the President of the New England Historic-Genealogical Society, and as the President of the American Pomological Society. *"By their fruits ye shall know them."*

MR. PRESIDENT:—You have called on me to respond for two institutions, and thus to do double duty while I am scarcely able to perform the service for one satisfactorily. But, sir, I am most happy to be here and to enjoy the privileges and pleasures of this most interesting occasion. Three years ago the New England Historic-Genealogical Society celebrated its twenty-fifth anniversary, when we were honored with your presence; and I am here now to reciprocate that favor, to join heart and hand in this festival, and to assure you of our desire to coöperate with you in efforts to promote the welfare of your association. Most heartily do I congratulate you on the prosperity of your institution and upon the great good it has already accomplished for the world. It is not often that the founders of institutions live to reap the harvest

of their own sowing, but you, sir, have stood by the cradle of its infancy and have watched its growth and are now permitted to rejoice with us in its full manhood and extensive usefulness.

Your association, like our New England Society, is giving special attention to the preservation and transmission of New England's history to future generations, and it is indeed a grateful and noble service. "History," says a renowned author "is but the development of God's grand plan, to preserve the treasures of human thought, and to increase for countless generations the absolute wisdom of mankind." And what more benevolent and glorious work can we have than the preservation of the history of our own beloved New England! Time will not permit me to refer to the early history of the colonies, with which Salem was so intimately connected, or to those principles of piety, patriotism and philanthropy, which laid the foundations of our free institutions, which have made our nation what it is, and which we believe are yet to revolutionize and christianize the nations of this earth; suffice it to say, that in all that pertains to civil and religious liberty, in whatever relates to the great and benevolent enterprises of the age, Massachusetts has ever stood forth prominently as the champion of progress and principle. It would be pleasant, had we time, to revert to some of the great events and great men which characterize her history from the time when Endicott and Winthrop landed on your shores. I cannot refrain, however, from alluding to a few of her sons who have moved on the stage of life within the last hundred years, and whose names and deeds will gild the page of American history with an effulgence which will shine brighter and brighter unto the perfect day; to Hancock whose bold sign-manual was affixed first to the ever memorable Declaration of Independence; to Frank-

lin who drew the electric spark from the clouds and held it in his hand ; to Morse who trained it in the way it should go, and taught it to speak all the languages of the globe ; to Field who laid that mystic wire in the fathomless depths of old ocean from continent to continent ; to your own Peabody, whose munificent bequests are the praise of all people, whose remains were sent home under royal convoy, here to rest in the bosom of your own soil ; and to Ames, all honor to his name, to whose indomitable energy and perseverance, we are indebted more than to any other man, for opening up a grand highway for nations across this continent in all coming time.

You have alluded to me, sir, in connection with the great industrial pursuits of our country. I thank you for your recognition of the American Pomological Society, which is also to celebrate its twenty-fifth anniversary in Boston next September, when I hope we may be honored with a large delegation from your institution, and where you will be cordially received by its first president, although I hope he may not be its last. Nor would I forget how much we are indebted to Essex County, especially to Salem for the promotion of the agriculture and horticulture of our land. Here was planted by Gov. Endicott one of the first, if not the first nursery, and the first pear tree in New England of which we have any account, and I am happy to know that the old monumental tree still survives. Here were planted just fifty years ago the Pomological Gardens of Salem, in which still live many noble trees as grand memorials of the planter, Robert Manning, to whom Mr. President, you alluded in your opening remarks. To him and to his son of the same name, who resides on the old homestead, the Massachusetts Horticultural Society and the country are indebted largely for the services they have rendered to the cause of American Pomology. These

gardens at one time contained about two thousand varieties of fruits, and where Mr. Manning, the father, had actually proved under his own inspection, eighty varieties of American apples and sixty varieties of American pears, with many other fruits. But Governor Endicott, or Robert Manning, could not have anticipated the influence of their example in fruit culture, which has now spread throughout the land, nor the immense quantities of fruit sent from the western and Pacific states to our eastern shores; nor the amount exported annually to Great Britain, there having been shipped in one vessel from Boston to Liverpool the last week more than two thousand barrels of apples. And now, sir, I desire to place on record the influence of the Essex Agricultural Society: a society which for more than half a century has stood at the head of the agricultural societies of this state, maintaining its high position to the present time. There may it stand forever. Its first president was Timothy Pickering, who had also been secretary of the first agricultural society ever established on this continent, the Philadelphia Society for the Promotion of Agriculture. It has been my privilege to be acquainted, and to labor, with many of the presidents of the Essex society, down to the present incumbent, whose hand and heart are open to every good word and work, and I stand here to-day to acknowledge the great good which the cultivators of your county have conferred on the world. But Mr. President, I must bring these remarks to a close. I thank you for remembering me in connection with the cultivation of fruits and flowers. From my childhood I have loved the cultivation of the soil and the enjoyments which spring from rural life; I am very fond of communing with nature, whether in her sublime or merry mood; I love to hear the thunder roll its awful diapason through the skies; I love to see the lightning flash

its fiery gleam from pole to pole, I love the blooming spring odorous with the fragrance of the garden and orchard, the summer landscape rich with the verdure of the forest and the field, the mellow autumn when nature pours from her overflowing lap the ripened treasures of the year. And I love to be remembered as one who has endeavored to do something for the improvement and embellishment of mother earth; something which shall contribute to the comfort and happiness of my fellow men; and may I not also add, in this presence, something which shall redound to the honor and benefit of our own New England; something which shall live when I am dead.

Prof. O. C. MARSH, of Yale College, being called upon, paid the high compliment to the Institute that through its influence the botany and zoology of Essex county were better understood than that of any other county in the United States. He spoke of the noble work the Institute had done in diffusing scientific knowledge over all parts of the country, and encouraging other societies designed to promote the same objects. It was at the hands of the Essex Institute that he himself acquired his taste for scientific investigations. He hoped that this was only the beginning of the usefulness of this society, and that we might all be present at its golden wedding, twenty-five years hence.

President J. D. RUNKLE, of the Massachusetts Institute of Technology, said his institution was merely following in the tracks of the Essex Institute—"we are making use of scientific knowledge by adapting it to the practical affairs of life."

Hon. GEORGE B. LORING, being called upon as President of the Massachusetts Senate, spoke as follows:—

MR. PRESIDENT:—I accepted your invitation to be present on this occasion so full of interest to the lovers of science and good learning, and to you especially, the founder and curator of this institution, with a firm conviction that in all this assembly I should be allowed to enjoy an "evening at home," and to listen to the remarks of the distinguished gentlemen from abroad who have come here to honor us by their presence and to encourage and edify us by their words. It was not until I was approached by the now existing president and toast-master of this occasion, with the question :—"What shall I set you off with this evening" (as if I were ready to be set off at any time and on any notice), that I realized that I should have any part to perform here. I am reluctant even now to respond: but I suppose a double presidency must be obeyed, especially in an institution where the voice of a single leader and presiding officer has always been considered supreme. And so I follow the example set me and endeavor to obey also.

As a citizen of Salem, I feel under great obligations to you and your associates for furnishing us with this opportunity to learn how worthy of all admiration our community is. The achievements of Salem in time past have not been forgotten by the gentlemen who have preceded me. They have not forgotten the efforts made by our ancestors to contribute their share to the independence, prosperity, intelligence and elevation of the nation of which we form a part. It is pleasant to be reminded of this, and to realize from the testimony of those who have no personal interest in, and attachment to, this spot, how worthy of all admiration is that record of past service, which the Essex Institute is gathering together and preserving with so much industry and care. I am gratified to know that Salem is considerable of a place after all.

To us who are surrounded by all the blessings which our ancestors bestowed upon us, this fact has long been familiar. This institution, whose twenty-fifth anniversary we now celebrate, busy as it always is in keeping the history of this city and of Essex County fresh in the minds of the people, forms a part of a system of education, study and investigation, which attracted the earliest attention of our people. The establishment of institutions of learning occupied much of the thought of our ancestors; and we point with pride to the fact that not only to the common school but to the higher seminaries of learning, to the Lyceum, and to the Library, and the Historical Society, and the Scientific Association, did this city turn its attention in the very commencement of its prosperity, and when she was obliged to set an example to others, instead of finding an example ready at her hands to follow.

That this tendency to intellectual enterprise grew out of the more commonplace virtue of industry in material affairs, who can doubt? Our fathers were a busy race. They believed in labor, and a constant exercise of their faculties in every good work. They were true to that fine principle of society laid down in those admirable volumes, Sandford and Merton, which we prized so highly and read so constantly when books were few, and newspapers were weekly, where the call of Mr. Barlow upon his associates to join him in founding a colony is recorded. Even our first governor had an impulse in the direction of toil; and John Endicott exerted himself to plant the single pear tree which now bears his name, before he abandoned the fields of agriculture, and entered upon the harder service of statesmanship. I rejoice in the industry and vigor of those men who gave us a community, and whose precepts have not yet been forgotten.

by the enterprising, and successful, and intelligent laborers in this vineyard which we have inherited. For the part which this institution has performed in the encouragement of scientific research, as one element of our busy civilization, this country ought always to be grateful. I value all the accomplishments of our people, their ingenuity and skill, their vigorous literature, their advancement in the business of common school education, their devotion to the cause of freedom, their material success, their intellectual accomplishment, their moral elevation which calls for honesty, and frowns on dishonesty, in public affairs. But I think I am more gratified with the bond they have created between themselves and other nationalities, by their progress in practical science, than by any other of their achievements. I am reminded here, that it was not the skill of the diplomatist which opened to the inquiring young American the great triumph of European engineering, but the reputation secured by a son of this town, a friend of this institution, Benjamin Peirce, the great explorer in the profoundest fields of mathematics. For this recognition, I am profoundly grateful; and I congratulate the young men who are giving their energies to the scientific association of the Essex Institute, on the position secured for them in these modern days, by the great leaders whom they follow through the field upon which they have entered.

I congratulate this city on the existence of the Institute, and I congratulate the founder of the Institute that his eyes behold this cheering and joyful anniversary.

NATHANIEL PAINE, Esq., President of the Worcester Natural History Society, returned thanks to the Essex Institute for its example, which had been a great benefit to the Worcester society, and tendered his warm congratulations on the attainment of this anniversary.

Rev. E. S. Atwood then read the following poem :—

“Poeta nascitur, non fit,” they say,
 That is, you cannot make him, any way.
 His song bursts forth in sweet spontaneous swell,
 You cannot draw it from a stoned up well;
 No rude compulsion wakes the sleeping lyre
 To thrill with music through each golden wire.
 The sweet south wind with soft Æolian blows,
 Too light to crush the petals of the rose,
 Calls from the strings the rich, low breathed refrain,
 That flings the summer’s music back again;
 But blustering Boreas, with his rude emprise,
 All to no purpose with his roughness tries,
 In vain his swaggering, and his furions calls,
 The frightened harp strings answer back in “squalls.”
 When “must” and “shall” stand at the poet’s back,
 And drive him on with many a lusty whack,
 What chance for any melody divine
 To voice itself in smoothly flowing line?
 The strident organ, to Italians dear,
 Is what the listeners are doomed to hear.
 ‘Tis not the best, nor what we like, ‘tis true,
 But when the best is lacking, worse must do.
 We looked for Holmes, and Amesbury’s bard to come,
 But Whittier’s not, and Holmes remains at home.
 Were they but with us, how the gods we’d thank!
 Alas, they’re not—Alphonso, turn the crank.

You’ve seen the country maid, new come to town,
 With quiet mien and simple homespun gown;
 No beauty’s artifice she needs nor knows
 By which the parchment skin is turned to rose;
 The pearl of nature shines along her face,
 And real blushes add their wondrous grace.
 A modest blossom—every charm its own—
 All that delights the eye, not bought but grown.
 But soon the city’s cunning tricks are learned,
 And honest nature out of doors is turned;
 And art comes in, to try with skilful hand
 To mend what fashion says is badly planned.
 What wondrous transformations then occur!
 Arabian Nights grow commonplace to her.
 The modiste’s scissors and the fashion plate,
 In sweet conjunction work her “up to date.”

Paris undoes the work of Paradise,
 And views its mangling with admiring eyes;
 Beflouneed, bepanniced, and be — who dare tell?
 The country maid blooms out a city belle.
 Now home returned, how all the rusties stare,
 What comments pass upon her gait and air,
 What adjectives set forth her altered state!
 All eyes are curious, and some flash with hate.
 Can this be she, our little modest maid,
 This gorgeous dame, so lamentingly arrayed?
 This strange shaped mass of flounces and of fuss,
 Whose wondrous outlines shock and startle us?
 The mad creation of some crazy dream,
 Such as inspires the art of Vinnie Ream.
 "And still they gaze, and still their wonder grows,"
 That one small dress can carry all those bows.

And some such change, perhaps, the world may deem
 Has come across the spirit of *our* dream,
 When the grave, staid and solemn Institute
 Comes out in worldly style, in party suit,
 Forsakes its search in Indian heaps of shell,
 To test instead the mollusks of Cassell;
 Studies crustacea in their salad state;
 Puts Darwin's jelly in a china plate;
 Leaves ornithology's hard terms untried,
 Enamored with the partridge at its side;
 Adopts a glacial theory in a trice,
 Choosing 'twixt lemon and vanilla ice;
 Plies knife and fork with scarce a moment's stay,
 And on to grave conclusions eats its way.
 "Is this?" "Is this?" cry people, horrified,
 "Is this the Institute, the city's pride?
 Are these the men that meet in yonder room,
 And sit with faces wrapped in funeral gloom,
 Scowling at bugs, and ferns and pickled fish,
 That form the common Monday evening's dish?
 Are these the calls of science, this the quest
 Which men push on with such a wondrous zest?
 Is this the way they burn the midnight oil,
 And talk to-morrow of their heavy toil?
 The secret's out; this jovial throng, to-night,
 With merry laugh and boundless appetite,
 Careless of isms and of theories deep,
 Toying with viands that will murder sleep,

In reckless mood have let the truth slip out,
 And told us what the Institute's about.
 Its genealogies and dusty lore,
 Its curious specimens of the days of yore,
 Its dredging, delving, these are all a blind;
 There's something very different behind.
 Perhaps for gravity it *used to* strive,
 It studies jollity at twenty-five."

So think the thoughtless, but the wiser sight
 Sees other meaning in our mirth to night.
 The hour of pleasure is the hour of rest,
 That sends us back to work with keener zest.
 So, when the factory bell, at evening time,
 Rings out upon the air its welcome chime,
 And, quick responsive to its clang ing beat,
 There comes the answer of a hundred feet,
 The merry jest goes round, and cheerful word,
 With happy laughter all the crowd is stirred.
 Forgotten for a while the thunderous din
 That roared and rattled in the workshop grim,
 Tense nerves relax, gaunt want forgets its pain,
 And childhood's dreams come drifting back again;
 The breath of country fields, the garden's sweets,
 Seem to sift through the smoke of city streets;
 For one brief hour the present fades away,
 While old time splendors glorify the day.
 And then toil takes again its heavy load,
 To travel on along the dusty road,
 Renewed and gladdened by the restful change
 That gave to hope and thought a wider range.
 So here we stand to-night with bows unbent;
 To-morrow sees us all on work intent.
 And, as the mirthful moments fade away
 Before the coming of the toilsome day,
 The earnest future, glowing in their light,
 Brightens before our cheered and quickened sight.

We look to-night a quarter century back,
 And mark the lustre of the shining track
 Left by the footsteps of illustrious sires,
 Who kindled long ago these altar fires.
 Amid the changes of a changing age
Decay's not written on *our* history's page.

Empires have risen, tumbled to their fall,
The throne of power been shrouded with the pall,
Fortune's swift turning wheel brought various fate,
To mighty interests in church and state;
But, midst them all, secure against their shock,
The Institute, safe founded on a rock,
Withstands the tempest and the billows' rage,
And gives no sign of weakness or of age.
E'en here at home, what changing scenes and powers
Have marked the passage of those flying hours!
The cherished city of our love and pride,
Sitting so softly by the restless tide,
Keeps only memories of that earlier time
That brought the treasures of the Orient clime,
Its silks, and fragrant gums, and spices sweet,
To lay in willing tribute at her feet,
And, o'er the common labor of the day,
Throw the weird splendors of the far Cathay;
No more her ships come from the golden quest,
Fanned by rich gales from Araby the Blest,
And other works employ the busy hands,
That gather gold no more from India's Sands.
But naught of this disturbs *our* prosperous state,
Nor checks our progress, ever growing great;
Still! star-eyed Science, running to and fro,
Eager to find whatever man may know,
Hunting in upper and in nether world,
Mining in shell-heaps or through star-rack whirled,
Contented here pulls off her seven leagued boot,
And makes her home the ESSEX INSTITUTE.
See, at our hearthstone, how she sits, and sends
Her pupils forth to serve her various ends,—
Some to dig Indians, some the sea to dredge,
Some to filch treasures from the rocky ledge,
Some to hunt bugs and spear them with a pin,
As though bug-murder could not be a sin;
And when, returning home with various hap,
Their spoils they empty in her ample lap,
She looks them o'er, and sorting out, she sends
The second best to "corresponding" friends;
The first and rarest for *our* use she "mounts,"
To be of knowledge the perennial founts.
Nor this alone—for lo! on happy nights,
'Midst breathless hush and half-extinguished lights,

Her magic screens with weird enchantments glow,
 And things of beauty from above, below,
 Snatched from the garden, gathered from the lea,
 Brought from the hill-side, borrowed from the sea,
 Lifted from nothingness to ample size,
 Pass in review before our wondering eyes.
 All lands come trooping with their tribute—meet
 To lay in offering at their Mistress' feet ;
 From the far realms where endless winter reigns,
 From tropic forests and from summer plains,
 There comes some gift of leaf, or life, or flower,
 To swell the wonders of th' enchanted hour ;
 Each form of marvel on this teeming earth,
 The shaping crystal and the insect's birth,
 The golden argosies that sail the air
 And freights of life to waiting blossoms bear ;—
 Each comes, obedient to the Mistress' call,
 And paints itself upon the canvas wall ;
 And over all, the magic work to crown,
 The nimble ether of the skies comes down,
 And subtile light waves, tortured for their name,
 Write out their autographs in rainbow flame.

These are our claimus, good friends, to love and praise,
 For this to-night, each heart its homage pays,
 For this the tables groan, and flowers' perfume
 Beats out in waves of fragrance through the room.
 Your presence cheers us : may its kindly power
 Be felt for good in many a coming hour !
 You've proved our *feasts*, now give our *fasts* a try,
 They'll be nutritious, if a little dry,
 And the old mother, gathering to her heart
 More lusty children, take another start.
 So will the century, rounding to the sphere,
 See gain and growth with each completed year,
 And to the glorious hundredth festival,
 We bid with hearty welcome one and all.

STEPHEN M. ALLEN of Boston being called upon responded as follows :—

MR. PRESIDENT :—I know of no position more embarrassing to a lay member of a scientific society, who may

be expected to say something on an occasion like this, than to find himself surrounded by both natural and professional scientists, whose experience and wits have been sharpened to the highest point by the study and acquisition of all kinds of scientific knowledge. I think, sir, that we have a slim chance, in such an audience, of expressing ourselves so as to appear either easy or interesting. A professional man has the advantage, for if he ever finds himself embarrassed in speaking, either in public or private, he can at once retire under the umbrella of his specialty and escape from the effects of any passing shower of general criticism. Should he be a geologist, he has but to commence on ichthyolites, oolites, sienites and granites, and his listener will never attempt to storm his fortress. If he be a physician, he can do the same thing, only substituting the tibia, fibula, scapula and aorta. The chemist fares equally well in his defence, when diving into the great sea of oxygen, nitrogen, and sometimes hydrogen, with a profusion of alternatives of nitrates, sulphates and bi-sulphates ever ready; while the mathematician or the astronomer can at once successfully and defiantly flee to the realms of space, talking of revolving worlds, of spheres and hemispheres, of constellations and occultations; and if sometimes it reaches aberrations, his listener, through a want of technical knowledge, may not be the wiser. But it is not so with the layman. To be at all happy in his position, he must have seen and known much of many things; in fact, often it seems as though he was expected to have been everywhere and possessed himself of all knowledge, without which he is reckoned uncultivated and behind the times. He is expected perhaps to consider himself fortunate, if perchance sometimes he is needed as a flux or is honored as the slag of science. But, sir, your Institute is progressing

in the right direction. It is searching and reaching practical knowledge at every step, gathering with both gentle and strong hands the truths which belong especially to the present moment, as well as what was in the past and which must be in the great future. Your coöoperators chosen from the gentler sex will prove beyond question, a tower of strength in aiding and sustaining the genius and integrity of your present success, as well as in perpetuating your future usefulness and glory. With the most hearty thanks for your invitation to be present to-night and the best wishes for your future prosperity, I will close with the following sentiment:—

The Scientist and Mechanic: May the former ever be as ready to loan the Umbrella of his Specialty to his lay-friends in a storm, as the latter is to make and present new ones, when the old shall have been worn out.

Able speeches were also made by the Hon. JOHN E. SANFORD, speaker of the Massachusetts House of Representatives, and by Rev. E. C. BOLLES of Salem, of which unfortunately no reports could be obtained.

SELECTIONS FROM LETTERS RECEIVED.

WORCESTER, Feb. 26, 1873.

My Dear Sir:

In behalf of the American Antiquarian Society and personally, I have the honor to thank the officers of the Essex Institute for the invitation to unite with them in celebrating the 25th anniversary of the organization of the Institute on the 5th of March next. But I regret to say that I cannot have the pleasure of attending. Yet I offer the cordial congratulations of the American Antiquarian Society that the Essex Institute, always respected as a leader in scientific inquiry, is now more rapidly growing in strength and usefulness.

Very respectfully yours,

STEPHEN SALISBURY.

President of American Antiquarian Society

DR. HENRY WHEATLAND, for the committee of the Essex Institute.

AMESBURY, 2nd 3rd Mo., 1873.

Dear Friend:

I fear it will not be in my power to be present at the celebration of the 25th anniversary of the Essex Institute at Salem on the evening of the 5th inst. As an Essex County man I always look upon the Institute as an honor to the county. Apart from its interest in a scientific point of view its festivals and excursions have exerted a very genial and social influence. Thanking the officers of the Institute for the invitation, I am very truly thy friend,

JOHN G. WHITTIER.

REV. E. S. ATWOOD.

BOSTON, March 1, 1873.

My Dear Sir:

I very deeply regret that an engagement, from which I cannot get clear, will prevent me from accepting your kind and cordial invitation to meet the members of the Essex Institute on the 5th of March. I regret it all the more because I think your Institute is doing important work in the advancement of knowledge. As an old Salem boy, I glory in everything which indicates the interest in science by matured Salem men. I cannot too warmly express my interest in your achievements and your plans. Salem, forever, is the feeling with which I sign myself,

Very sincerely yours,

E. P. WHIPPLE.

U. S. COAST SURVEY OFFICE, }
Washington, March 4, 1873. }*Dear Sir:*

But for the public duties which have claimed my attention here your invitation would have been gladly accepted.

Regretting that I cannot be with you at Plummer Hall to-morrow night, to join in the social reunion of the Essex Institute,

I remain, very truly yours,

BENJAMIN PEIRCE.

H. WHEATLAND, Salem, Mass.

RIVERDALE AVENUE, }
New York, March 1, 1873. }*My Dear Doctor Wheatland:*

I most heartily thank you for your kind invitation to attend the Institute anniversary next week. How much I regret that unavoidable duties here stand in the way of its acceptance, I need not say. You remember my deep interest in the objects and meetings of the Insti-

tute; and you can well understand that the occasion to which you invite me would prove most attractive. The presence and sight of your fellow laborer [Prof. Packard] in connection with the Institute, the other night, at the dinner at Delmonico's in honor of Tyndall, brought back to me delightful memories of the evenings when we used to gather at the rooms in the Plummer building, and Putnam, Morse, Cooke, Goodell, Emerton, Johnson, *et alios*, alas! Peabody, Huntington, Davis, possibly others gone hence, were choice spirits in our discussions. These are memories deeply cherished still; and I count it not the least among the privileges of my residence in old Salem, to have been associated with such as these, much more to my own advantage as was the connection, than it could have proved to my fellow members of the Institute.

I again thank you, my old friend, for your courtesy, and beg to express the wish that your celebration, in all its features of instruction and good fellowship, may prove all that you desire.

Believe me always, faithfully your friend,

GEORGE D. WILDES.

NEW HAVEN, CONN., FEB. 17, 1873.

Dear Sir:

I have to thank you, and through you, the Committee of Arrangements, for the kind invitation I have just received to a banquet on the evening of March 5th.

I should take the greatest pleasure in being present, if I could so arrange as to leave home at that time, but as I fear that will be impossible, I am obliged to forego the pleasure, and so gratefully decline the honor.

The continued prosperity of the Essex Institute is a matter of satisfaction to all the naturalists of the country, and it is to be hoped, and indeed expected, that its brilliant example will be followed in many parts of the land.

Anything that will show to our money-loving nation that there is a truer and higher expression of value than the sign of the dollar, \$, is a thing which will in the end advance the whole people in their ideas of essential and permanent usefulness.

Even the professional advocates of a purer and more unselfish practice of religion will always find a great gain to themselves and their cause from the careful study of Natural History, for only in this way can they learn how it is that all natural phenomena, "creeping things and flying fowl,—fruitful trees and all cedars" fulfil the design of the great Creator, and give back a clear and unmistakable response to the

Psalmist's invitation: "Bless the Lord, all his works, in all places of his dominion."

I am, with deep regret that I can not be with you,
Yours very truly,

DANIEL C. EATON.

D. B. Hagar, Esq., Member of Committee of Arrangements for the
25th Anniversary of Essex Institute.

BROOKLINE, Feb. 20, 1873.

My Dear Sir:

Yours of the 18th inst., has this moment reached me. It is full of temptation. It would give me real pleasure to be with the Essex Institute at their celebration, and to bear witness to their great success in the cause to which their labors are devoted.

But I am compelled to deny myself, and can only offer them my grateful acknowledgments of their kind invitation, with my cordial wishes for their continued success and prosperity.

Believe me, dear sir, with great regard, very faithfully yours,
ROBT. C. WINTHROP.

ABNER C. GOODELL, JR., Esq., Vice Pres't.

BOSTON, Feb. 28, 1873.

My Dear Sir:

Illness will deprive me of the pleasure of accepting your kind invitation to the 25th anniversary of the organization of the Essex Institute. I rejoice that Dr. Wheatland will witness it.

Glorious old Essex is rich in great names some of which yet wait, and can afford to wait, for historical justice. In the day when History shall supplement mere Annals, the portrait of Cutler, the minister of Hamilton, which now adorns the walls of the Institute as a man of local distinction, will, with that of Dane, the Beverly lawyer, be elevated to a chief place among our national portraits, and the names of Manasseh Cutler and Nathan Dane be as household words throughout the land for all time. Their joint work, the Ordinance of 1787, July 13—some months prior to the adoption of our present Constitution, is hardly second in importance to the Declaration of Independence. Except the Constitution it is perhaps the most important instrument among the fundamental acts of the country, for it established the principles of civil and religious liberty as the organic basis of all governments and laws in the northwest. It was "the cloud by day and the pillar of fire by night," warding off slavery and barbarism, and securing the primeval waste of forest and prairie of the northwest for the children of the north Atlantic states, who, like

their fathers, should demonstrate the capacity of man for self-government. It was this civilization that, when slavery, with the warm breath of old world despotism, was against us, gave us Lincoln's Proclamation of Emancipation; it blotted out slavery; it vindicated the Declaration of Independence; and saved the nation. Let the nations love and reverence the names of Cutler and Dane. They

“ — heard the tread of pioneers
Of nations yet to be;
The first low wash of waves where soon
Should roll a human sea.”

Yours, sincerely,

J. WINGATE THORNTON.

ABNER C. GOODELL, Esq., V. P., Chairman of the Com. of Arrangements.

The celebration as a whole must be considered as an eminent success. The evening was propitious, the arrangements well carried out in all their details, the speeches thoughtful and interesting, and no untoward incident marred the enjoyment of the festival from its beginning to the close. The occasion will long be remembered by those who were so fortunate as to be present, as a fitting celebration of the twenty-fifth anniversary of the Essex Institute.

BULLETIN

OF THE
ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., APRIL AND MAY, 1873. No. 4.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, APRIL 14, 1873.

Meeting this evening. The PRESIDENT in the chair.
Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Stephen M. Allen, Boston, March 27, 28; C. Alice Baker, Cambridge, April 6; Henry Barnard, Hartford, March 17; Oliver N. Bryan, Marshall Hall P. O., Ind., March 17; A. Crosby, Salem, April 10; S. C. Gould, Manchester, New Hampshire, March 21, 31; S. A. Green, Boston, March 29; George Haskell, Ipswich, April 8; D. Webster King, Boston, April 8, 10; G. B. Loring, Salem, April 3; A. A. Scott, Saugus Centre, April 8; James Usher, New York, March 17; Marshall P. Wilder, Boston, April 8; Charles V. Woerd, Waltham, April 10, 12; American College of Heraldry, New York, April 13; Bern. Die Naturforschende Gesellschaft; New York Genealogical and Biographical Society, New York, March 24, 29, April 5; Ohio Historical and Philosophical Society, Cincinnati, March 15.

THE LIBRARIAN reported the following additions :—

By Donation.

ALLEN, STEPHEN M., of Boston. Proceedings of the Laying of the Corner Stone of the Standish Monument on Captain's Hill, Duxbury, Oct. 7, 1872.

- BUTLER, B. F., of U. S. House of Representatives. Bingham's Speech in the U. S. H. R., Feb. 26, 1873. Butler's Speech in U. S. H. R., Feb. 27, 1873.
- CLEAVELAND, N., of Topsfield, Mass. Political Pamphlets, 2 vols., 8vo. Miscellaneous Sermons, 2 vols., 8vo. Religious Pamphlets, 2 vols., 8vo. Miscellany, 2 vols., 8vo. The Psalms of David, by I. Watts, 1 vol., 12mo, 1786. Massachusetts Register, 1809, 1 vol., 16mo. Psalms, 1 vol. 12mo.
- GREEN, S. A., of Boston, Mass. Miscellaneous pamphlets, 11.
- MASSACHUSETTS HORTICULTURAL SOCIETY. Transactions of, for 1872.
- OSGOOD, ALFRED, of Newburyport, Mass. Annual Report of the School Committee of Newburyport for 1872. Report of the Directors of the Public Library of Newburyport, 1872.
- PALFRAY, C. W. Miscellaneous pamphlets, 35.
- POTTER, Rev. E. N., of Schenectady, New York. Proceedings at the Inauguration of the President of Union College, 1871-72.
- THURSTON, C. MYRICK. Genealogy of the Thurstons and Pitmans of Rhode Island. 1 vol., 8vo. New York, 1865.
- U. S. PATENT OFFICE of Washington, D. C. Official Gazette, March 4, 11, 18, 1873.

By Exchange.

- ARCHIV FÜR ANTHROPOLOGIE, Band v, Heft iv, 1872.
- BIBLIOTHEQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences Physiques et Naturelles, Dec., 1872, Jan., 1873.
- GEOLOGICAL SURVEY OF CANADA. Report of Progress for 1871-72.
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- PUBLISHERS. American Naturalist. Essex County Mercury. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Sailors' Magazine and Seamen's Friend. Salem Observer. Silliman's Journal. Western Lancet.

Among the donations announced may be specified a Pocket Bible more than two hundred years old, from Miss MARY C. ANDERSON, and bearing the imprint of 1658. Not only is the title page illustrated with a nicely executed steel engraving quite creditable to the period, but the covers and gilt edges are ornamented with an elaborateness rarely equalled at the present day. The inscriptions show the transmission from one person and generation to another. From Mrs. Dolearne to Eliza Whetstone; from Eliza Whetstone to Peter Clarke; from the widow of Peter Clarke, in 1805, to John Jones Gascoigne Clarke; from the latter's administrator to Deborah Fairfax An-

derson, Aug. 9, 1838, and from the latter at her death, March 23, 1841, to her daughter, Mary Clarke Anderson.

From NEHEMIAH CLEAVELAND, Esq., of Topsfield, an ancient stand for a christening basin. It is made of iron, of a rather rude style of construction, and was found under the pulpit when the third Topsfield meeting-house was taken down. It was no doubt used in the second meeting-house built in 1703, and may have belonged to the first house.

From Mr. OLIVER N. BRYAN, of Marshall Hall P. O., Maryland, some relies of the tomb of Mrs. Deborah Fairfax, situated upon the banks of the Potomac, in a most lovely spot, a beautiful grove composed chiefly of white oaks, elevated above the river about fifty feet, commanding a beautiful view down seven and up five miles, overlooking a large portion of Prince George and Charles Counties, Maryland. Mrs. Deborah Fairfax was the daughter of Francis and Deborah (Gedney) Clarke of Salem, and was living in the house on the corner of Essex and North streets, on the site of which now stands the Shepard Block, when William Fairfax came to Salem as collector of the port, with his family, and lived in the house on the corner of Cambridge and Essex streets, taken down the past season to erect on its site a more eligible mansion.* The wife of Mr. Fairfax died in 1731; he afterwards married Miss Clarke and in 1734 removed to Virginia by invitation of his cousin Thomas, the sixth Lord Fairfax, to be the superintendent of the estates that had lately come into his possession through his mother, who was Catherine, daughter of Lord Culpeper.

From Miss EUNICE RICHARDSON, specimens of old continental currency.

*See Bulletin of Institute, Vol. iv, p. 62.

Dr. A. S. PACKARD, Jr., exhibited a large series of photographs of scenery in Colorado and Montana Territories taken by Mr. A. H. Jackson, under the auspices of the United States Geological Survey of the Territories, Dr. F. V. Hayden geologist. They were in two sets, and comprised some of the finest views in the National Yellowstone Park and Colorado Territory. From them one could obtain a very clear idea of the Geyser region which has been studied and mapped out by the Survey; of the springs in course of eruption, and of the falls and basin of the Yellowstone. He gave an account of the supposed origin of these extensive hot springs of which several thousand are supposed to exist. He also alluded to the value and interest of the discoveries made by Dr. Hayden in the west for a period of nearly fifteen years.

STONE KNIVES.

Mr. F. W. PUTNAM occupied the greater portion of the evening with an account of the various forms of cutting instruments made of stone, and classed by archaeologists under the general head of knives. A large number of specimens were exhibited, showing the different forms so far as they were represented by specimens in the Museum of the Peabody Academy of Science.

Knives or cutting instruments of various shapes and degrees of perfection have been found in more or less abundance in all parts of the world where stone implements have been collected and studied. Many of these cutting implements are simple flakes of flint or other stone; in fact any stone with a sharpened edge attained either by chipping or grinding, and of such a form as to show that it was not intended for use as a skin scraper, dagger, spearhead, arrowhead, small axe, or other similar implement, is classed under the head of knives; but while

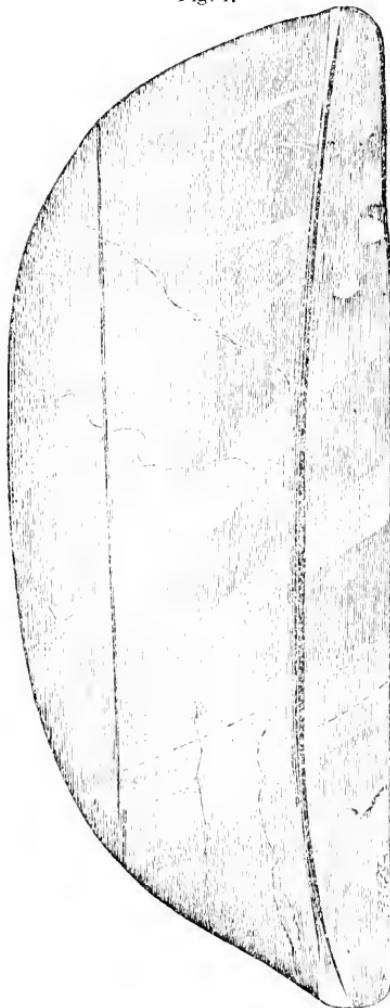
various stones, in many cases showing hardly any work upon them with the exception of providing a cutting edge, are thus brought into the group, it must not be taken for granted that all the stone knives of the prehistoric races were of this rude character.

Many beautiful cutting implements have been found in various countries, especially in North America. Schoolcraft, in his extended work on the Indian tribes, figures several fine specimens, notably the one represented on plate 45, figures 1 to 3 (vol. ii), found at Hartford, Washington County, N. Y., which he states to be carved from a piece of green serpentine. This knife is somewhat sickle shaped, five and three-quarters inches long, with a curved triangular blade descending from a well formed rounded handle. Schoolcraft also figures (vol. ii, pl. 49, fig. 4) a cutting implement with a blade five and three-quarters inches long by an inch in width. The figure shows a thickened portion answering for a back or handle. This specimen was found in Genesee Co., N. Y. The drawing is, however, very poorly executed and the description is so brief as to leave us in doubt as to the exact character of the implement. The specimen figured on his plate 50, figures 5 and 6 (vol. ii), under the title of "fragment of a blade of a battle-axe," and described as made of silicious slate, is far too thin and fragile an implement for a battle-axe, and is more likely another form of slate knife, perhaps having two symmetrical blades, through the centre of which (the figure shows a broken groove, which may represent a hole drilled through the centre of the blades) a wooden handle was inserted.

Squier and Davis in their work on the "Ancient Monuments of the Mississippi Valley," comprising the first of the splendid series of monuments in honor to James Smithson, under the title of the "Smithsonian Contribu-

tions to Knowledge," p. 216, give a small wooden of a semilunar shaped knife, which they state is a form "occasionally found in the Eastern states.

Fig. 1.



Knife from S. dem., made of gray slate with dark and red veins and mottlings. Full size.

Abbott Collection of the Peabody Academy of Science. These were found near Trenton, New Jersey, and by the kindness of Dr. Abbott I am able to use the woodcut

sometimes composed of slate, and are of various sizes, often measuring five or six inches in length. They are well adapted for flaying animals, and other analogous purposes." Their figure represents a knife of the same shape as the one here engraved (Fig. 1).

Of these semilunar shaped knives I have seen quite a number of specimens in various collections, but thus far all, as stated by Squier and Davis, have been from the Eastern states. In the Peabody Museum of Archaeology, at Cambridge, there are several of this form, one of which is about eight inches long and is labelled "Paring Knife. Amoskeag Falls, 1795."

Two other knives of this shape are in the

representing one of them (fig. 2) in advance of its appearance in his work on the "Stone Age in New Jersey," for the purpose of showing its great resemblance to the specimens from Essex County, of which there are two in the Academy Museum. The one represented here as figure 1 is the more beautifully finished and perfect of the two. It was found in Salem and placed in the Museum of the East India Marine Society. It is not quite five inches in length and is a little less than two inches in greatest depth of blade and back. The back is about half an inch in depth and a little over a quarter of an inch in width at the centre; narrowing at the ends; perfectly flat above. The blade is one-fifth of an inch thick along the under side of the thick back; it is gradually thinned out to the cutting edge all round, which is only one-tenth of an inch thick about one-fifth of an inch from its outer margin, which is evenly and nicely brought to a sharp cutting edge. The engraving shows the shape of the knife better than words will describe it. It will be noticed that the blade is slightly more pointed at one extreme than at the other. The material is a gray slate having several fine veins of a harder substance (quartz?) as shown in the engraving; it is quite ornamented with several dark wavy lines, light streaks and bands, and a number of irregular wavy lines of a red mineral running in all directions over the surface, but not indicated in the engraving.

Another specimen, also received by the Academy from the East India Marine Society Museum, was found on the farm in Danvers formerly owned by Governor Endicott. This specimen consists of about one-half of the knife, and was evidently, when perfect, about six inches long and two and a quarter deep. It was made of a slate very much like the Salem specimen, but without the dark and red veins and mottlings.

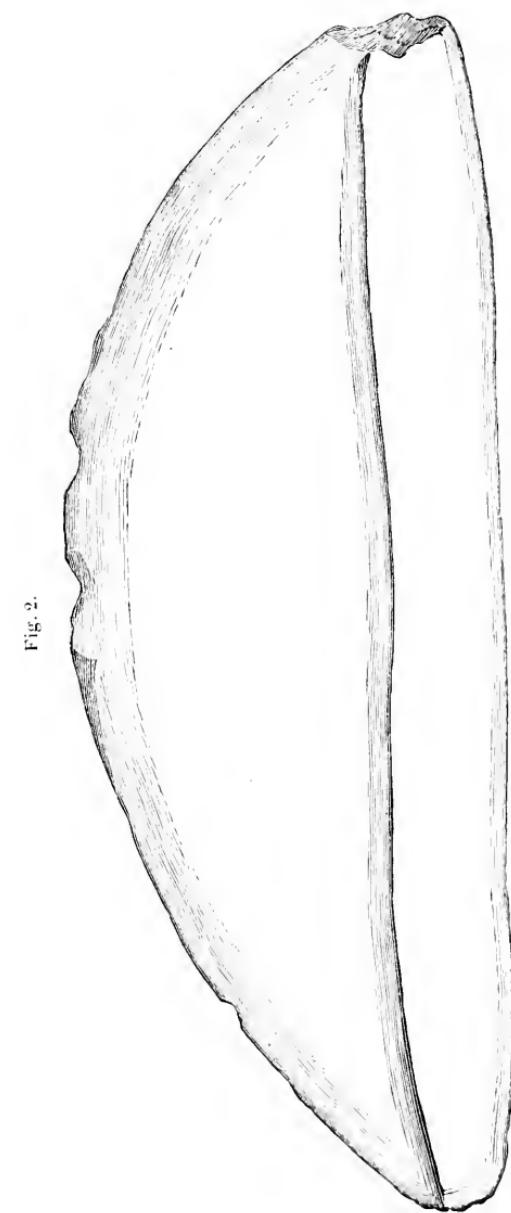


Fig. 2.

Knife made of light clay slate from Trenton, New Jersey. Full size.

Among the many interesting specimens secured for the Museum of the Academy, by Mr. John H. Sears, is a knife of dark taleose slate which is unlike any other that I have seen. The specimen is represented as figure 3. It was found near the church in Putnamville (Danvers) and is thus of marked interest to us as a reli from Essex County. It is slightly over five inches in length, and about one and one-half inches in depth at its centre. It is worked to a rounded point at each end, as shown by the engraving, and the smooth cutting edge is from point to point. The greatest thickness of the blade is one-fifth of an inch. The back of the knife is ground off to quite a thin edge, but evidently was never sharpened to form a cutting edge, though the back is so thin as to render its being held in the hand an uncomfortable matter while using the knife in this way, and the three holes that have been rudely cut, apparently by seraping backwards and forwards with a pointed stone, on both sides, until a hole was made, are evidence that the knife was mounted on a handle by passing bands through the holes and around the handle,

Fig. 3.



Knife made of dark taleose slate,
from Putnamville. Full size.

which was probably grooved along its under side to fit over the sharp back of the knife. In common with the other slate knives, this specimen was finished with care and is perfectly smooth and well sharpened along its cutting edge.

Evans, in his instructive work on the "Ancient Stone Implements of Great Britain," mentions (p. 311) that in some Esquimaux knives the blade is tied to a wooden back by a cord which *passes through a hole in the blade.*

It would thus seem that our New England Indians, for to them I think we must look as the makers and owners of the knives I have specially described, were not satisfied with using simple flakes of stone and broken arrow and spear heads for knives, but that with them as with us to-day there were many, and often elaborate, styles of this most useful implement, and who can say that to possess a good knife was not as much the ambition of the men of the departed race as it is with those who have succeeded them?

Messrs. Charles D. Styles, John H. Derby, George F. Breed, Samuel Edson Cassino and Matthew Robson, all of Salem, and John G. Barker of Lynn, were duly elected resident members.

A committee, consisting of Messrs. John Robinson, James Kimball, E. S. Atwood and Caleb Cooke, was appointed to nominate officers to be balloted for at the annual meeting. The president and secretary were afterwards added to the committee.

Adjourned.

REGULAR MEETING, MONDAY, MAY 5, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. In the absence of the SECRETARY, Dr. WILLIAM NEILSON was requested to act. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Stephen M. Allen, Boston, April 22; Jacob Batchelder, Lynn, April 29; T. T. Bouv , Boston, March 21; S. P. Boynton, Lynn, April 29, May 1; George Derby, Boston, April 29; Samuel A. Drake, Boston, April 19; James H. Emerton, Boston, March 14; J. C. Holmes, Detroit, Mich., April 12; E. Rupert, Boston, April 26; William H. Rush, Chelsea, April 23; Henry Saltonstall, Boston, April 14; N. Vickary, Lynn, April 30; Charles V. Woerd, Waltham, April 18; William H. Yeomans, Columbia, Conn., May 3; American Antiquarian Society, April 26; American Geographical Society, April 30; Basel, Naturforschende Gesellschaft, August 12, 1872; Boston Public Library, April 23; Buffalo Society of Natural Sciences, April 17; Chicago Public Library, April 23; New Jersey Historical Society, April 21; New York Lyceum of Natural History, April 22; University of Wisconsin, Madison, April 30.

Mr. JOHN ROBINSON gave an account of the floral progress of the year, noticing the period of the opening of the flowers of several of the native plants and comparing the same with that of previous seasons.

He mentioned the finding, by Mr. C. E. Faxon of Cambridge, of a fern (*Aspidium munitum*), hitherto unknown in the United States, but known in the West India islands and other parts of the tropics; also that *Asplenium ebenoides*, only found in Philadelphia some years since, had been noticed in Alabama, growing with *Asplenium ebenum* and *Camptosorus* as at the Philadelphia locality, thereby adding to the weight of the theory that it was a hybrid between the latter two.

He also said that, without doubt, if thorough search be made at the south, many plants not known in our flora would be found, many difficulties having prevented the

tourist and scientist from visiting that region at the proper season of the year to collect the best specimens.

Rev. E. C. BOLLES mentioned the occurrence at Swampscott, on the Stetson farm, very near the railroad, of one of the most beautiful of the microscopic Algae, the *Batrachospermum moniliforme*. This plant requires very pure running water; and it closely invests the stones in little streams, moving its clusters of soft green threads very gracefully with the flowing of the brook. Under a lens each filament is seen to consist of a central thread, around which, at regular intervals, are whorls of other threads at right angles to the first, so that the whole appears like minute circular brushes, similar to those used for cleaning the flues of a chimney and strung like beads some distance apart. The threads are necklaces of globular cells, and the spores are to be found in a cluster near the centre of each whorl. These plants are with difficulty preserved, as they change color and cease to exhibit this peculiar arrangement when pressed on paper. They are usually put up for the microscope in glycerine jelly.

Mr. F. W. PUTNAM mentioned having noticed the appearance on April 3rd, of the common or white-bellied swallow, *Tachycineta bicolor*.

Charles A. Carlton of Salem was elected a resident member.

Adjourned.

BULLETIN
OF THE
ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., MAY, 1873. No. 5.

One Dollar a Year in Advance. 10 Cents a Single Copy.

ANNUAL MEETING, WEDNESDAY, MAY 14, 1873.

According to the notification, the meeting was held at 3 p. m. The PRESIDENT in the chair. Records read.

The annual reports of the officers and of the curators were read and accepted, and from them the accompanying

RETROSPECT OF THE YEAR,

exhibiting a satisfactory condition of affairs and the progress made, during the interval, in the promotion of the objects of the institution, has been compiled.

MEMBERS.—Changes occur in the list of associates by the addition of new names, and the withdrawal of some by resignation, removal from the county, or by death. In this connection, notices of nine of the resident members, who have deceased within the year, are inserted.

B. R. Allen. Scarcely had two or three weeks elapsed,

after our last annual gathering, ere the First Congregational Church in Marblehead was called to part with a beloved minister, Rev. B. R. Allen. He was born in Newport, Rhode Island, June 2, 1805, ordained in Marblehead in 1854 and since that time has resided in that town highly esteemed and revered. He joined the Institute several years since, has attended some of its meetings and was interested in its objects. He died June 2, 1872.

Henry Curwen, son of Samuel R. and Mary L. (Holman) Curwen, died July 13, 1872, aged 25; he early associated himself with the Institute. His duties as a clerk in one of our large business houses precluded him from being a very active member.

Brown Emerson. On Thursday evening, July 25, 1872, the South church in this city lost by death the aged and venerable senior Pastor, Rev. Brown Emerson, D. D., who had been connected with them in this holy bond of brotherhood for more than two-thirds of a century. He was the son of John and Catherine (Eaton) Emerson and was born at Ashby in this state January 8, 1778; graduated at Dartmouth College in 1802, and was ordained April 24, 1805, as colleague with the Rev. Daniel Hopkins, D.D., whose daughter Mary he married Oct. 29, 1806, a lady of uncommonly excellent traits of character, who survived until April 4, 1866, sustaining the happiest married relations for a period of nearly sixty years. Dr. Emerson was a person of noble presence, tall, erect, and of fine proportions, courteous and genial in his manners. His patriarchal appearance in his later years will long be remembered.

William S. Cook, son of John and Eliza A. (Leighton) Cook, died December 7, 1872, aged 28.

William Silver, son of James and Susan (Howard) Silver, died at Salem, January 16, 1873, aged 64. In

early life a master mariner; afterwards a merchant. By his death, Salem loses another link in the chain which connects it with that period in its history when the sails of its merchantmen whitened every sea, and its merchants were known throughout the commercial world. He retired from all his trusts successful and with a proud record, and as a citizen was widely known and respected.

Henry C. Perkins. On Saturday, February 2, 1873, our neighboring city of Newburyport was pained by the announcement of the sudden decease of one of her most eminent physicians, Henry C. Perkins, M. D.; he was the son of the late Thomas Perkins and was born in that place, Nov. 13, 1804; graduated at Harvard college in 1824, and after the usual medical tuition located in the place of his birth and resided there until his decease, devoting the leisure he was enabled to obtain from an extensive and successful practice to scientific investigations, in which he took much pleasure and was an ardent and zealous worker. Rev. Dr. Spalding of Newburyport has kindly consented to prepare a memorial to be read at some future meeting with a view to its publication in the "Historical Collections."

Abraham F. Bosson, of Salem, died February 21, 1873, aged 61; a son of Thaddeus and Abigail (Fowler) Bosson. His interest in the Institute centred in the horticultural department; he was a very zealous and devoted cultivator of the choicest flowers and fruit and liberally contributed to the horticultural exhibitions given under the auspices of the Institute.

John Chapman, the senior editor of the Salem Register, died on Saturday, April 19, 1873, having been able to perform his usual duties in the office until within a few weeks of his decease, when he was stricken by a disease which soon proved fatal. He was son of John and Ruth

(Henfield) Chapman and was born in this city, Sept. 4, 1793, and was consequently on the verge of fourscore. He entered the office of the Register in 1807, having been engaged in the duties of a printer, nearly as many years as his venerated pastor, who died a few months previous, had occupied the pulpit of the South church in this city. Having held many offices of trust and being much in public life, few citizens were so generally known or will be so much missed.

Timothy Ropes died April 25, 1873, aged 75; son of Timothy and Sarah (Holmes) Ropes. In early life he made several voyages to India; afterwards became a dealer in crockery and hardware. He was very fond of horticultural pursuits and was a constant contributor of flowers and fruit to the horticultural exhibitions, especially to those held some twenty or thirty years since.

MEETINGS.—Three field meetings have been held during the season; first, at Middleton, June 12, 1872, by invitation of Mr. Simon F. Esty, who tendered the use of his grounds on the border of "Forest Lake," formerly known as the Great Pond, as the place of rendezvous for the day. At the meeting in the church, remarks were made and resolutions passed to the memory of Dr. Wm. Stimpson; Mr. David Stiles presented some historical notices of Middleton; D. J. Tapley of Danvers exhibited a curious Indian relic found by Mr. Seneca Ladd of Meredithe village, New Hampshire; Mr. James H. Emerton spoke on spiders; Rev. E. C. Bolles on Microscopic Fungi —also Mr. F. W. Putnam, Dr. A. H. Johnson, A. C. Goodell, Jr., Esq., Rev. Mr. Frary and others, made appropriate remarks suggested by the occasion.

The second meeting at Groveland, July 16, 1872, by invitation of Dr. Jeremiah Spofford. An object of

special interest was the new iron bridge connecting the town with Haverhill. The new academy building, which was the rendezvous of the day, is also deserving of honorable mention. It was recently built, (mainly through the efforts of Dr. Spofford), on the site of the former building destroyed by fire a few years since. At the meeting Dr. Spofford gave a very interesting sketch of the history of the academy; Prof. E. S. Morse spoke on the "Frog Spittle" *Ptyelus lineatus*, and described the habits of this curious insect; James H. Emerton mentioned several cases of protective colors and habits in spiders which he had seen during the morning walk; Messrs. Abner J. Phipps, agent of the State Board of Education, D. B. Hagar of the State Normal School, Salem, S. C. Beane, E. C. Bolles, LeRoy F. Griffin and others, made interesting remarks.

The third, at Annisquam, on Thursday, Aug. 8, 1872. The pleasant summer's day so congenial and appropriate for a visit to the seashore induced many to accompany the Institute on this excursion to the rock-bound coast of Cape Ann. In the afternoon F. W. Putnam spoke of the shell heaps which he had visited; also gave an account of the development of the skate's egg, the cases which contained the embryo being frequently found cast upon the beaches; Rev. W. E. Coffin of Orange, formerly a pastor of this church, and J. J. Babson, gave interesting historical sketches of this parish; remarks were made by Messrs. A. W. Dodge, L. J. Livermore, James Davis, C. E. Barnes, Addison Davis, and others.

Evening meetings have been held at the rooms, usually on the first and third Monday evenings of each month except on those in June, July, August and September. At these meetings many valuable communications have been

presented, and abstracts have been printed in the BULLETIN or reserved for the "Historical Collections;" John Robinson, on our early native plants, with a floral calendar kept by one of our young and enthusiastic collectors, noting the blooming of some of the spring flowers for several years past; also a paper on ferneries, how to make them and what to put in them; George H. Devereux, on the origin of surnames; a catalogue of the mammals of Florida by C. J. Maynard, with notes on their habits, distribution, etc.; A. S. Packard, an account of recent explorations of St. George's Bank in the U. S. C. S. Steamer Bache; on the glacial phenomena of northeastern America compared with those of Europe; F. W. Putnam, on ancient Indian carving; E. S. Atwood gave an account and read extracts from a journal, of a journey to Philadelphia by the late Rev. B. Emerson, some fifty years since; James H. Emerton, on worms of the genus *Nais*; Stephen M. Allen, on the ancient and modern theories of light, heat and color; Harold Herrick of New York, a partial catalogue of the birds of Grand Menan.

In this connection it may be deemed appropriate to allude briefly to the meeting, March 5, 1873, commemorative of the twenty-fifth anniversary of the organization of the Institute. On this occasion were present His Excellency the Governor, the President of the Senate, the Speaker of the House, and many other distinguished persons.

LECTURES.—On Wednesday evening, Oct. 16, 1872, Rev. E. C. Bolles commenced a series of eight lectures in Mechanic Hall, Salem, entitled "Eight evenings with the Microscope," and continued on successive Wednesday evenings, except the seventh on Tuesday, Dec. 2, and the eighth on Tuesday, Dec. 9. Mr. Bolles also delivered a

lecture before the Peabody Institute in Danvers, one before the Newburyport Lyceum, a course of six lectures in March and April in Odd Fellows Hall, Lynn, and a supplementary on Monday, May 12. A course of five lectures is in course of delivery in Danvers, having begun on Thursday, April 17. The subjects of the above lectures were selected from those delivered in Salem during the past autumn. A course of familiar lectures on microscopical studies commenced in the rooms of the Institute on Monday, April 21, the second on Wednesday, April 30, and the others on successive Wednesday evenings. The above lectures,* which were under the direction of the Institute, were popular and instructive descriptions of the history and construction of the Microscope; and included exhibitions of specimens in the various fields of nature, illustrating by aid of the calcium light the discoveries which the microscope has made. Mr. E. Bicknell assisted Mr. Bolles in the illustrations and managed the lantern.

CONCERTS.—Five concerts have been given by members and friends of the Institute on Thursday evenings commencing with Thursday, March 27, 1873. They were very successful and gave much pleasure and gratification not only to those interested in this pursuit, but to others. To Mr. Charles H. Higbee, for his untiring and assiduous exertions in the attainment of a favorable result, the Institute is greatly indebted.

MUSEUM.—Many valuable specimens have been given during the year; those relating to Natural History, in accordance with previous arrangements, have been deposited with the Trustees of the Peabody Academy of Science; and of the collection in the custody of the trustees it is

*See BULLETIN, Vol. iv, p. 46.

only necessary to say that the same care is bestowed upon our specimens as is upon their own. Those of an historical character are in the immediate care of the Institute, consisting chiefly of curiosities, relics and early Essex County household chattels. It is desirable that a more systematic arrangement be made, and the curators of that department are requested to consider the propriety of having the same done, at an early date, in an interesting and attractive manner. The visitors to inspect the old frame of the first building for the First Church increase every year.

LIBRARY.—The additions during the year have been as follows:—

Donations.

Folios,	15	Pamphlets and Serials,	5,834
Quartos,	30	Almanacs,	57
Octavos,	412		—
Duodecimos,	59	Total,	5,891
Sexdecimos,	36	Total of bound volumes,	552
	—		—
Total,	552	Total of Donations,	6,443

Exchanges.

Quartos,	16	Pamphlets and Serials,	1071
Octavos,	61	Total of bound volumes,	80
Duodecimos,	3		—
	—	Total of Exchanges,	1151
Total,	80	Total of Donations,	6443
	—		—
	—	Total,	7591

Of the total number of pamphlets and serials 2,515 were pamphlets, and 4,390 serials.

The donations to the Library for the year have been received from one hundred and twelve individuals and fifteen societies and public bodies.

The exchanges have been received from ninety-one societies and incorporated bodies, of which sixty-eight are foreign.

From the editors of the "American Naturalist" one hundred and thirty-seven serial publications.

FINANCIAL.—The Treasurer's Report shows an increase in the annual income, yet additional means are requisite to enable the Institute to perform in a fitting manner the various duties which the community may reasonably expect.

DEBITS.

Athenaeum for rent and Librarian.	.\$350.00
Salaries, \$876.88; Coal, \$140.00,	1016.88
Postage and Express, \$45.47; Sundries, \$49.20,	94.67
Lectures (Bolles), \$1251.66; Collecting, \$5.75,	1257.41
Gas, \$32.49; Goldthwaite and Day, \$118.84,	151.24
Insurance, \$40.00; Publications, \$2200.00,	2240.00
To balance,	202.42

Historical.

G. Southward, \$10.00; J. Perley, \$85; Books, \$7.00,	103.00
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Natural History and Horticulture.

J. Perley, \$25.00; C. A. Walker, \$3.50,	28.50
	<u>\$5,444.12</u>

CREDITS.

Dividends Webster Bank, 40.00; Lectures, 1214.57,	\$1254.57
Notes and interest,	1585.51
Sundries,	87.38
Athenaeum, proportion of coal, janitor, etc.,	145.00
Assessments, \$1,200; Publications, \$617.18,	1817.18
Balance of last year,	2.48

Historical.

Dividends Naumkeag Bank, \$21.00; Michigan Central R. R., \$17,	71.00
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Natural History and Horticulture.

Dividends Lowell Bleachery, \$80.00; P. S. & P. R. R., \$20,	100.00
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Daris Fund.

Coupons Dixon, Peoria and Hannibal R. R. Bonds,	240.00
Coupons Burlington and Missouri River R. R. Bonds,	140.00
	<u>\$5,444.12</u>

PUBLICATIONS.—The BULLETIN has been continued in monthly numbers, giving full reports of the doings of the Institute and abstracts of papers read at the meetings;

this makes an annual volume of some one hundred and sixty pages. Vol. xi, Nos. 2, 3 and 4, of the "Historical Collections," have been printed completing vol. xi.

The SECRETARY announced the following correspondence :—

From Buffalo Society of Natural Sciences, May 12; Buffalo Historical Society, May 10; New York Lyceum of Natural History, May 12.

Also the following letter from Dr. A. H. Johnson was read :—

SALEM, May 14, 1873.

The undersigned regrets that while holding the position of Secretary of the Institute during the past year, he has been able to give but little attention to the duties of the office, which have consequently devolved almost entirely upon its President.

The irregularities connected with the medical profession are incompatible with that regular performance of clerical labor, and punctual attendance upon meetings, which the office properly demands. Therefore, unwilling longer to hold an office whose duties must be left to others to perform; grateful for the kind consideration shown to him during his exceedingly imperfect, although never wilfully neglectful, service; with no abatement of interest in the Institute and its objects, but with the hope to serve it better in some other way, he hereby resigns the office of Home and Recording Secretary of the Essex Institute.

Respectfully submitted,

A. H. JOHNSON.

OFFICERS ELECTED

for the year ensuing and until others shall be chosen in their stead :—

President.

HENRY WHEATLAND.

Vice Presidents.

Of History—A. C. GOODELL, JR. *Of Horticulture*—WILLIAM SUTTON.

Of the Arts—D. B. HAGAR. *Of Natural History*—F. W. PUTNAM.

Recording and Home Secretary.

JOHN ROBINSON.

Foreign Secretary.

A. S. PACKARD, JR.

Treasurer.

HENRY WHEATLAND.

Librarian.

WILLIAM P. UPHAM.

Superintendent of the Museum.

CALEB COOKE.

Curators of Historical Department.

W. P. Upham, M. A. Stickney, John Robinson.

Curators of Natural History Department.

H. F. King, G. A. Perkins, William Neilson.

Curators of Horticultural Department.

Caleb Cooke, John Robinson, H. W. Putnam.

Curators of Department of the Arts.

C. H. Higbee, Jas. A. Gillis, Geo. M. Whipple.

Lecture Committee.

Jas. Kimball, Geo. Perkins, Wm. Northey, E. C. Bolles, Joshua

Coit, A. H. Johnson.

Finance Committee.

John C. Lee, Richard S. Rogers, Jas. Upton, Geo. D. Phippen.

Field Meeting Committee.

A. W. Dodge, E. N. Walton, Caleb Cooke, N. A. Horton,
· Alfred Osgood.

Library Committee.

J. G. Waters, Alpheus Crosby, E. B. Willson.

Publication Committee.

A. C. Goodell, Jr., F. W. Putnam, R. S. Rantoul, Henry M. Brooks,
E. S. Atwood.

The PRESIDENT spoke of the movement for a "Free Library" in Salem, and a desire of many citizens for the coöperation of the Salem Athenaeum and Essex Institute with the city government and others interested in the

attainment of this object; and suggested the appointment of a committee to confer with a committee of the city government and other institutions, and, when a plan has been matured, to report the same for the action of the Institute, at a meeting legally called for the purpose.

The President, Vice Presidents, Recording Secretary and Librarian were chosen on said committee.

The SECRETARY spoke of some flowers which were upon the table, and alluded briefly to the prospect of the horticultural exhibitions the coming season.



REGULAR MEETING, MONDAY, MAY 19, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

Horace B. Sargent of Salem was elected a resident member.

Adjourned to Thursday evening, May 22.

BULLETIN

OF THE
ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., JUNE, 1873. No. 6.

One Dollar a Year in Advance. 10 Cents a Single Copy.

ADJOURNED MEETING, THURSDAY, MAY 22, 1873.

THE PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the correspondence :—

From Stephen M. Allen, Boston, May 16; Jacob Batchelder, Lynn, May 21; Caroline H. Dall, Boston, May 15; B. H. Hall, Troy, New York, May 12, 19; J. C. Holmes, Detroit, Michigan, May 15.

The LIBRARIAN reported the following additions :—

By Donation.

ANDERSON, M. C. The Holy Bible. 1 vol. 42mo. London, 1658.
BUTLER, B. F., of U. S. H. R. Congressional Globe, 2d Session, 42d Congress, 1871-72. 5 vols. 4to. Index, 1871-72. 1 vol. 4to. Appendix, 1871-72. 1 vol. 4to. Ninth Census of the U. S., 1870. 1 vol. 4to. Message and Documents, 1872-73. 4 vols. 8vo. Department of Agriculture, 1871. 1 vol. 8vo. Commercial Relations, 1871. 1 vol. 8vo. Geological Survey of Montana and the Adjacent Territories, 1871. 1 vol. 8vo. Land Office Reports, 1870, 1871. 2 vols. 8vo. Geological Survey of Wyoming and Contiguous Territory, 1870. 1 vol. 8vo. Patent Office Reports, Vols. ii, iii, 1859. 2 vols. 8vo. Finance Report, 1872. 1 vol. 8vo.

CROSBY, ALPHIEUS. Boston Daily Advertiser, 1863, 1870, 1871, 1872. The Commonwealth, 1855, 1856, 1857, 1858, 1859, 1870, 1871, 1872. Boston Daily Journal, 1867, 1868, 1869, 1870, 1871, 1872. Salem Gazette, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870,

1871. Salem Observer, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872. Salem Register, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871. Boston Daily Transcript, 1865, 1866, 1867.

NATIONAL ASSOCIATION OF WOOL MANUFACTURERS. Bulletin, Jan.-Mch., 1873. U. S. PATENT OFFICE. Official Gazette, Mch. 25.

WARD, JULIA E. Catalogue of the Mt. Holyoke Female Seminary in South Hadley, Mass., for 1872-3. 8vo pamph.

By Exchange.

BOTANISK TIDSSKRIFT, KJØBENHAVN. Tidsskrift, Anden Raekke. Forste Bind. Tredje og Fjaerde Haette. 2 pamphlets, 8vo.

KONGELIGE DANSKE VIDENSKABERNES SELSKAB KJØBENHAVN, Oversigt. 1871. No. iii. 1872. No. i. 2 pamphlets, 8vo.

KÖNIGLICHE GESELLSCHAFT DER WISSENSCHAFTEN. Göttingen Nachrichten, aus dem Jahre, 1872.

MINNESOTA HISTORICAL SOCIETY. Report for 1872. 8vo pamph.

NATURFORSCHENDE GESELLSCHAFT IN BERN. Mittheilungen, Nos. 745-791. 1871. NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Register and Journal of, April, 1873.

PHYSIKALISCH MEDICINISCHE GESELLSCHAFT IN WÜRZBURG. Verhandlungen, Nene Folge, iii Bd., iii Heft, Wurzburg, 1872.

VEREIN ZUR BEFÖRDERUNG DES GARTENBANES, BERLIN. Wochenschrift, Nos. 1-52, 1872.

YALE COLLEGE. Catalogue of the Linonian Brothers' Library. 1 vol. 8vo.

PUBLISHERS. Bouton's Catalogue. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Quaritch's Catalogue. The Foxboro Times. Salem Observer.

The PRESIDENT noticed the recent donation, from Henry K. Oliver of Salem, of a portfolio containing plans of several of the old houses of Salem, and other architectural designs, made by Samuel McIntire, the noted architect of Salem, during the latter part of the last and the first of the present century; also a manuscript book of records, entitled, "The First Book of Records of the Proprietors of Common Lands of Salem Village," presented by Miss Ruth Marsh of Peabody.

Christopher Metzger of Danvers was elected a resident member.

EDWARD BROWN, of Brooklyn, New York, occupied the hour with an interesting lecture upon "Christianity in

its Relation to Moral Philosophy and Literature." Mr. Brown was educated a "Friend," and is now a member of that society, and it was from this standpoint that the subject was viewed.



SPECIAL MEETING, MONDAY, JUNE 9, 1873.

MEETING at 8 P.M. The President in the chair.

The President stated that this meeting was called to pay a tribute of respect to the memory of Rev. John Lewis Russell, of this city, an original member of the Essex County Natural History Society, and its president from 1845 to 1848, when the union with the Essex Historical Society was effected, and a new organization adopted under the name of Essex Institute. Mr. Russell was a vice-president of the Institute from its organization until 1861.

Rev. E. B. WILLSON presented the following resolutions, which, after appropriate remarks from Rev. Messrs. Willson and Batchelor, Mr. George D. Phippen and Rev. Messrs. E. C. Bolles and E. S. Atwood, were adopted:—

Resolved, That in the death of JOHN LEWIS RUSSELL, the Essex Institute has lost one of its founders, one of its earliest, most learned and most enthusiastic leaders in scientific study:—one who for many years filled important offices in its management, and devoted himself to its interest with an inspiring zeal and energy.

That in his death science loses a loyal and ardent disciple; and in his own chosen department of Natural History a distinguished proficient.

That public education owes much to him as a lecturer and teacher in her normal and other schools of higher instruction, where his rare power of clothing science in

beauty kindled in many a desire for closer acquaintance with nature, and discovered to them a new and pure joy in the pursuit of that knowledge, through her boundless realms of order and ever unfolding life.

Resolved, That the foregoing resolutions be entered upon the records of the Institute; and that a copy of them be sent to the family of Mr. Russell, with an expression of the sincere sympathy felt by the members of the Institute for them in their bereavement.

A committee consisting of G. D. Phippen, S. P. Fowler and F. Putnam was requested to take such further notice of the deceased as may be deemed appropriate.



FIELD MEETING AT AMESBURY, THURSDAY,
JUNE 19, 1873.

THE leafy month of June, with the fields and landscape clothed in their richest verdure, and dotted with the varied hues of many flowers, invites the Institute to commence the series of field meetings, the succession of which during the season exhibits the different phases which nature assumes, from the opening of the bud to the ripening of the golden fruits of autumn. This county, located in the northeastern corner of the Old Bay State, and having one side washed by the waters of the ocean, offers to the student of nature an opportunity to investigate the marine fauna and flora, in addition to those usually found in our excursions to the inland towns, where an entirely different class of objects, peculiar to such localities, grow in their wild luxuriosness.

The attendance at this field meeting was larger than usual for the opening meeting, and, although the weather was uncomfortably warm, the occasion was one of great

enjoyment. The party went by the train leaving Boston at 7.30, and on arrival at Newburyport were met by Messrs. Brown and Crane, a committee of the Amesbury and Salisbury Historical Society, who had come thus far to welcome them and to escort them to their destination. On arrival at the Salisbury station, guides were found in readiness to accompany those who desired to visit the Indian shell heaps, which were more accessible from that point than from the one at Amesbury. On arrival at the end of the route, many of the leading citizens had assembled and extended a cordial reception. The party then separated into groups, and sallied forth in charge of trustworthy guides to visit various objects of interest abounding in the vicinity. Many who had been long familiar with the writings of the distinguished poet, JOHN G. WHITTIER, now for the first time saw his cheerful face; and his home, and the unpretending meeting-house where he worships, were among the objects sought with a feeling akin to veneration by those who have admired his touching word pictures in simple verse. The extensive woollen mills and the flourishing carriage manufactories attracted much attention, and the general appearance of thrift and industry was a subject of commendation. Several of the churches and school-houses were also objects of interest. The woods, swamps and ponds were peculiarly attractive, and were visited by many. A large company ascended Powow Hill, said to be the highest land in the county, and were well repaid for their toil by the extensive views in all directions. With the unaided eye four states can be clearly seen, and with a powerful glass the mountain peaks of the Green and White ranges can be readily discerned.

Shortly after one o'clock the party repaired to Merri-mac Hall, where the ladies of Amesbury had prepared

the tables with a bountiful and elegant repast embracing everything seasonable and delectable — meats, pastry, cake, ices, coffee, frnits, flowers, etc.

The meeting for reports and addresses was held at the Universalist Church at 2.30 p.m.

As the audience assembled a voluntary was performed upon the fine organ.

President WHEATLAND in the chair.

Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Stephen M. Allen, Boston, June 6; E. C. Bolles, May 19; S. P. Boynton, Lynn, June 17; C. H. Dall, Boston, June 1, 3; G. F. Flint, June 2; J. A. Gillis, May 20; L. F. Griffin, Andover, June 18; Harold Herrick, New York, June 7, 16; A. Lackey, Groveland, May 29; W. P. Lunt, Boston, June 18; A. Osgood, Newburyport, May 9, 17, June 4, 13; G. W. Pease, June 6; M. A. Stickney, May 30; M. Vickary, Lynn, May 31; C. A. Walker, Chelsea, May 20, June 13; E. B. Willson, May 17; G. B. Wood, Elizabethtown, N. Y., June 9; W. C. Wood, Wenham, May 23; Ashbel Woodward, Franklin, Conn., June 6; Berlin, die Gesellschaft Naturforschender, March 22; Buffalo Society of Natural Sciences, June 6.

The LIBRARIAN reported the following additions :—

By Donation.

ATWOOD, E. S. Memoir of Nathaniel Bowditch, 1 vol. 4to. Introductory Discourse and the Lectures of the American Institute of Instruction, 1831, 1833. 2 vols. 8vo. Miscellaneous volumes, 6.

BUTLER, B. F., M. C. Compendium of the Ninth Census of the U. S., 1870. 1 vol. Report on the Commerce and Navigation of U. S., 1872. 1 vol.

CITY OF BOSTON. Boston City Documents, 1872. 3 vols.

CLOGSTON, WM., of Springfield, Mass. Zanesville Directory, 1872-73. 1 vol. Lockport City Directory, 1871-72. 1 vol. Manchester Directory, 1871. 1 vol. Auburn Directory, 1869. 1 vol. New Bedford Directory, 1855. 1 vol. Burlington Directory, 1871-72. 1 vol. Lawrence Directory, 1857. 1 vol. Manchester Directory and Almanac, 1856. 1 vol. Northampton Directory and General Advertiser, 1860-61. 1 vol. Chelsea Directory, 1860-61. 2 vols.

DRIVER, SUSAN S. History of the late Polish Revolution. 1 vol. Agriculture of Mass., 1854, 1857. 2 vols.

FOLGER, W. C., of Hingham. Miscellaneous Town Reports, 5.

GRANT, J. C. Scientific American, 1853-72.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 9.

JOHNSON, MRS. SAMUEL. Miscellaneous pamphlets, 26. Almanacs, 6.

LEE, JOHN C. Commercial Bulletin, March 15, 22, 29, April 5, 12, 1873.

MARSHALL, WM., of New York. Reports of the Brooklyn Park Commissioners, 1861-1873. 1 vol.

OSGOOD, C. S. Manual for the Common Council of Salem, 1873. 1 vol.

PALFRAY, C. W. Steam-Boiler Explosions, by J. R. Robinson. 1 vol. Protection to Native Industry. 1 vol. Miscellaneous pamphlets, 20.

POOLE, F., of Peabody, Mass. Peabody Press and Danvers Monitor, 1872.

SALEM MARINE SOCIETY. Laws and List of Members from 1766-1872. 1 vol.

SILSBEY, MRS. B. H. The Science of Government, by C. B. Goodrich. 1 vol. Report on the Trees and Shrubs in Mass. 1 vol. History of the Water Works of Boston, 1868. 1 vol. Abstract of the Mass. School Returns, 1845-46. 1 vol. Eighth Census of the U. S., 1850. 1 vol. Patent Office Report, 1854. 2 vols. Salem Municipal Register, 1867. 1 vol. Water Power of Maine. 1 vol. 22 pamphlets.

STEARNS, R. E. C., of San Francisco, Cal. Directories of San Francisco for 1863-64, 1870. 2 vols.

TENNEY, HARRIET A. Catalogue of the Michigan State Library, 1873-74. 1 vol.

U. S. PATENT OFFICE. Official Gazette, May 6, 13, 27, 1873.

WALKER, F. A., of Washington, D. C. Compendium of the Ninth Census of the U. S., 1870. 1 vol. 8vo.

The PRESIDENT, in his opening remarks, alluded to the pleasant associations connected with a visit to this town of Amesbury, well known, with its neighbor, Salisbury, to the mercantile community, for its varied mechanical industries, and especially in the field of letters, as the home of New England's best known and honored poet, Whittier, who from this quiet retreat has sent forth many of those graphic lines that have contributed so much to the cause of liberty and human progress. He said that ten years had elapsed since the Institute held its first meeting in this town. It was on Thursday, June 25, 1863, one of the loveliest of June days. The people were very kind and hospitable, and pointed out the various objects of historic and scientific interest. Our vice president, Mr. A. C. Goodell, Jr., was present on that occasion, and gave an account of his rambles among the historic memorials and reliques, noticing among others the graves of two of the first ministers, Rev. William Worcester and Rev. John Wheelwright, the latter distinguished for his persistent advocacy of the cause of Anne Hutchinson and for the persecutions he endured therefor; the old Bartlett house, where Josiah Bartlett, one of the first signers of the Declaration of Independence, was born, and the room in the building where the commis-

sioners met to define the boundary between New Hampshire and Massachusetts.

The President alluded to a singular coincidence that had occurred during the past week: the remains of three persons who had been in years past interested in the objects of the Institute, have been consigned to the silent tomb, and he offered the following tribute to their memories.

1st. Rev. JOHN LEWIS RUSSELL, one of the founders of the Natural History Society and, after 1848, the vice president of the Natural History department of the Essex Institute; one of the earliest, most learned and most enthusiastic leaders in scientific study; for many years filling important offices in these institutions; cabinet keeper, curator, vice president and president. At all our early field meetings he was a constant attendant and frequently the presiding officer, devoting himself with an inspiring zeal and energy to contribute to the interest and importance of these gatherings. He was the son of Col. John and Eunice (Hunt) Russell, and was born at Salem, Dec. 2, 1808, and received the first rudiments of instruction at her schools. When John was about the age of eleven his father removed with his family to Amesbury and resided several years in that place, having the charge of the Amesbury Iron factory, and then returned to Salem; during this period John attended the Newburyport Academy, under Masters Bailey and Pike, except the year immediately preceding his admission to Harvard College in 1824, which was spent in the town where we are now assembled, studying under the direction of Rev. Mr. Barnaby, the Baptist clergyman—probably well known to some now present. After graduation he entered upon the study of the ministry, and in due course of time was licensed to preach. He was settled over churches in Chelmsford,

Hingham, Brattleboro and several other places. He, however, always considered Salem his home, and for the last twenty years has permanently resided there, withdrawing from ministerial labors and devoting almost exclusive attention to scientific investigation. He was eminently known as a botanist, particularly in the cryptogamic flora of this county. He died on Saturday afternoon, June 7, 1873.

2nd. WILLIAM OLIVER THAYER, son of Oliver and Rachel (Bancroft) Thayer, of Salem. In his early boyhood William brought to the horticultural exhibitions contributions of fruits and flowers from his father's garden. Since that time he has always been an interested member, although his business avocations prevented him from taking an active part in the meetings of the Institute. He died on Monday, June 9, 1873, aged thirty-nine years and nine months.

3rd. Hon. RICHARD SALTONSTALL ROGERS, well known to those of a past generation as an active merchant in the firm of N. L. Rogers & Bros., who were the pioneers and founders, in the United States, of the Zanzibar and New Holland trades; for many years, down to 1842, were actively engaged in foreign commerce mainly with the East Indies, and were among the most distinguished merchants of Salem. He was son of Nathaniel and Abigail (Dodge) Rogers, who were both eminent teachers in Salem. He was earnestly interested in municipal affairs, a good citizen and an energetic, enterprising and efficient man of business, and much respected for his many excellent qualities; always a liberal patron of the Institute and contributed largely to its success. He died at his residence in Salem, June 11, 1873, aged eighty-three years.

Expressing great pleasure at meeting so many of those

who were present at the meeting of 1863, and the opportunity now afforded of extending our acquaintances in this goodly place, the President called upon

Hon. ALLEN W. DODGE, of Hamilton, who responded and said that while he did not profess to be much of a scientific man, he did claim to be second to none in his love for nature and his desire to see the objects of the Essex Institute accomplished. The President had spoken of the death of some who had been identified with us, and we are reminded that men die, but events live. If the man who makes a blade of grass grow where it did not is a benefactor, so is he who introduces a new fruit or a new flower, or who opens up some new view of nature. The last quarter of a century had been one of great progress, and we cannot foresee what the next twenty-five years will bring in the department of scientific investigation. The question may be asked, What good will it do? It will make somebody better; it will make somebody happier. He spoke of the pleasant morning hours he had spent in his garden, and advised any one who did not know by experience what it was to take a little exercise before breakfast, to get up some morning at four o'clock, and try the experiment.

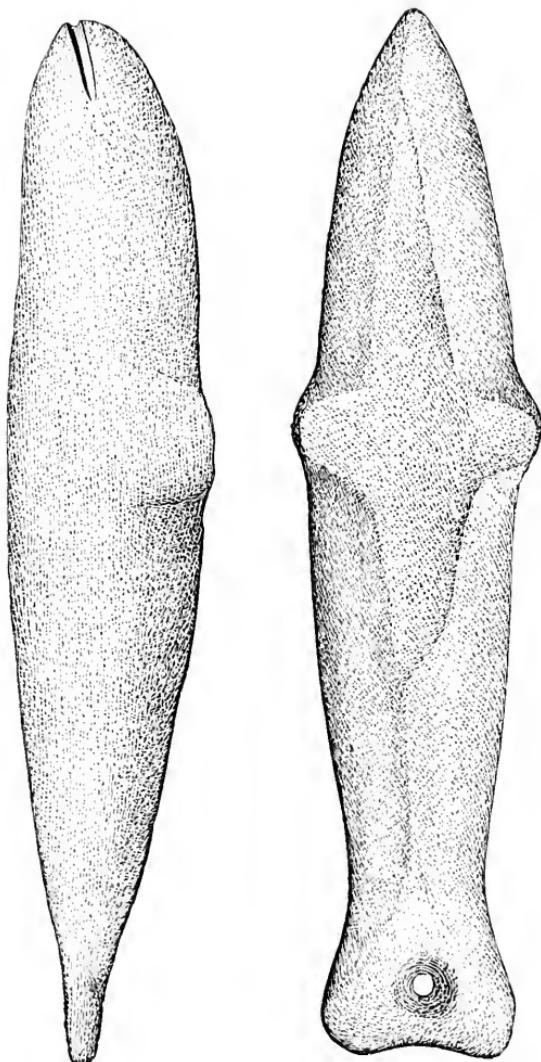
Mr. Dodge then referred to some ancient wills and inventories he had examined, and spoke of the curious insight afforded by probate documents into domestic and social life of the olden times. Our forefathers did not have friction matches, but tinder boxes, or, earlier still, tinder horns. Our maternal ancestors manufactured their own cloth, and made it into garments and bedding, and in those days it required these things in abundance to provide for the large families of children, then called blessings. At that period they raised children, and

cattle, and all kinds of stock, in great abundance. Well, there was more room to grow then than now, and our ancestors were equal to the occasion. Mr. Dodge concluded with some valuable practical suggestions, expressed in humorous and attractive phrase, and thanked the people of Amesbury and Salisbury for the active interest manifested on this occasion.

Mr. F. W. PUTNAM exhibited a number of stone implements which he had been allowed to select for the purpose from the very interesting collection belonging to the Amesbury Natural History Club. He stated that he had selected the forms on the table as they illustrated the various types of stone implements found throughout New England and consisted of the several forms of arrowheads, spearheads, skin-dressers and scrapers, chisel and gouge-shaped implements, axes, hammer-stones, sinkers, pestles, etc. Many of the forms on the table were common the world over, and showed conclusively that the same ends were accomplished by the same means; other forms, though belonging to the same general groups, were, however, slightly different in the details of their execution and were peculiar to New England so far as he knew. The long-bladed axe, with the rounded upper portion, and some of the gouged-shaped implements came into this group. The large, roughly made "plumb bob" shaped "sinkers" are one of the forms, as yet to his knowledge, found only in New England. These large pear-shaped implements are quite common on the sea-coast and are so well adapted for use as sinkers to nets that they are generally classed as such, though it cannot be questioned but that many of them run into the forms of pestles, and would serve well for use as such, provided grit was no objection as a component of "Indian cake;"

though the grit would be avoided if such pestles were used in wooden mortars similar to those in use by the early white settlers in this country. The extreme softness of the stone of which these large pear-shaped implements were made, combined with the fact that they seldom exhibit signs of use at their rounded end, was the only argument against their use as pestles. But as an argument that they were sometimes used as pestles it was stated by one of the gentlemen of the Amesbury Club that the specimen on the table was found in a stone mortar; there was also a specimen in the Salem collection that was said to have been found in the same connection. Some of the arrowheads among the specimens were very fine, and exhibited the several forms, from the leaf-shaped to the barbed and stemmed, several specimens being of the form, having one of the wings longer than the other. While some of the symmetrical arrowheads were very long and slender, others were of the short and broad shape. There were also in the collection a number of specimens of stone-drills which are often placed by collectors with the arrowpoints, but which on examination show that a different use was intended, and implements of this character are now believed to have been made and used simply for the purpose of drilling holes in other implements. One of the largest and most perfect of these drills which Mr. Putnam had ever seen was exhibited.

Besides these various implements there was a very interesting carved stone belonging to the collection, which Mr. Putnam had obtained permission to figure. It rudely represented a porpoise or still better a white whale or *Beluga*, as it had no protuberance representing the dorsal fin of the porpoise, and the Beluga is without the fin. The flippers or pectoral fins were represented by the pro-



Indian totem from Seabrook, N.H., one-half natural size. In Coll. Amesbury Nat. Hist. Club.

tuberances on the sides, and the mouth was cut in and well indicated. The broad horizontal tail was decidedly cetacean in character, and the whole carving, though rudely done by picking the sienitic rock from which it was made with stone implements, was yet so characteristic as to indicate at once that a porpoise or Beluga was intended. A hole through the portion representing the tail shows that the object was suspended, but the stone is so large and heavy that it can hardly be classed as a personal ornament, though it is probably to be regarded as a totem. It measures ten inches in length by about two in depth at the pectoral fins, and is about two and a quarter inches wide across the pectorals as measured on the under side. This interesting specimen was found at Seabrook, N. H., and it is said that two other similarly worked stones have been found at the same place.

[The figures here given from drawings made by Capt. J. A. Greeley of Amesbury, and Mr. J. H. Emerton of Salem, represent the "totem" in profile and from the under side.]

Mr. JAMES H. EMERTON gave a curious account of several species of spiders, particularly one that never builds its own house, but dislodges some other tenant, thus living by acquisition rather than construction.

Mr. EMERTON having placed a few batrachians, collected by some of the party, on the table, Mr. PUTNAM was called upon to give an account of them, which he did by reviewing the batrachian fauna of the state, and noticing the various habits and peculiar notes of the several species of toads and frogs found in the vicinity, and comparing them with the salamanders, which are another order of the same class. He also gave an account of the development of the batrachians and showed the dif-

ferences between the salamander and frog in certain details, and that in the general law of development from the egg they agreed with each other and approached more nearly to the fishes than to the true reptiles, with which they were so commonly but erroneously classed by persons generally. He concluded his remarks by showing the close agreement between the true reptiles, comprising the snakes, lizards, turtles, etc., and the birds.

Rev. W. H. EATON, of Amesbury, by request, gave a short sketch of Rev. Mr. Barnaby, formerly settled over the Baptist church in Amesbury, and now, at the age of eighty-five years, engaged in his fourth pastorate over the church in East Hardwick, where he was originally ordained, and into which organization he had received more than twelve hundred members on profession of faith.

Mr. HOMER B. CRANE, of Amesbury, spoke briefly of the geological peculiarities of Amesbury, especially of Powow Hill.

Dr. H. G. LESLIE, President of the Amesbury and Salisbury Historical Society, alluded to the benefits to be derived from scientific research, and spoke of the vein of lead discovered near the summit of Powow Hill and also offered a few remarks on some of the stone implements that he had collected.

Mr. WILLIAM ASHBY, of Newburyport, now in his eighty-sixth year, spoke of his long interest in the Essex Institute, and bade it God speed in its work.

Rev. C. M. DINSMORE, of the Methodist church in Amesbury, spoke eloquently of the importance of teach-

ing from nature rather than depending exclusively upon text-books, and hoped that the minds of the people would turn more to the study of nature. In England, he said, the laboring people crowd out to scientific lectures, but in America, comparatively speaking, science has no interest.

WILLIAM C. BINNEY, Esq., of Amesbury, said he wished to express his gratitude to the Institute for this visit; he had been interested and had gained much information. He hoped ten years would not intervene before the next field day in Amesbury.

Rev. P. S. BOYD, of the Congregational church, in Amesbury, Mr. GEORGE WILLIAMSON, of Amesbury, and Dr. W. H. NOYES, of Newburyport, offered a few remarks.

William H. Dennet of Beverly and W. H. H. Marsh of Salem were elected resident members.

ALFRED OSGOOD, Esq., of Newburyport, introduced the following resolutions:—

Resolved, That the grateful thanks of the Essex Institute be tendered to Mrs. Jacob R. Huntington, Mrs. J. Hume, Mrs. S. S. Spear, Mrs. P. S. Boyd, Misses A. M. Boardman, Lizzie Hume and May Huntington, Dr. A. T. Brown, Messrs. E. A. Brown, H. B. Crane, J. Hume, J. T. Greeley, Wm. D. Pecker and J. G. Whittier; also to the Amesbury and Salisbury Historical Society, the proprietors of Merrimac Hall and of the Universalist church, and all who have contributed to make this meeting so successful.

The resolution was unanimously adopted and the meeting adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 5.

SALEM, MASS., JULY, 1873.

No. 7.

One Dollar a Year in Advance. 10 Cents a Single Copy.

FIELD MEETING AT LYNNFIELD, WEDNESDAY, JULY 30, 1873.

THE party arrived about 10.30 A.M., and after assembling in the church, which was the head-quarters for the day, and where the preliminary arrangements were made, separated into groups for the various excursions; some went to "Robin's Rock," some visited the woods; others collected about the borders of the lake. Owing to the purity of the water the dredging party were not very successful in collecting specimens though several curious and interesting forms were detected.

Lynnfield is a place which has many natural attractions. It was formerly a part of Lynn, at which time it was known as Lynn End. It is almost exclusively a farming town, and its public affairs are always conducted frugally and with good judgment, so that its taxation is low, and the town is never in debt. It has about a thousand in-

habitants, and two villages which are three miles apart, neither being large settlements, but the largest of the two being at the Centre, which has two meeting houses and the town hall. The latter institution is, in fact, contained in the old church, which, in Parson Motey's day, began to harbor a larger share of the "liberal" theology than has been common in country towns; Mr. Motey himself, in his closing years, being a Unitarian. The result was the building of a new church devoted to the more exclusive propagation of the "Orthodox" creed. The second story of the old church is still retained as a place of worship, and Mr. Eben Parsons, a lay minister, of the Unitarian denomination, regularly officiates there. The other church is at the present time without a pastor. In South Lynnfield, near the hotel, there is a small meeting house, where regular preaching is supplied by Mr. J. F. Wilson, a student from Andover. For a number of years, the ministerial duties were performed by Mr. Jacob Hood, who formerly resided in Salem, but is now a resident of Lynnfield Centre.

The Lynnfield hotel, which is an institution that dates with the building of the Newburyport turnpike, is not now used for public purposes, but in its day it has served as a landmark which will be long remembered as the resort of sleighing parties from Salem.

Humphrey's Pond, near the hotel, is a beautiful sheet of very pure water. During the war times, the pond, with the level land adjoining, afforded sufficient advantages for the location of an encampment, and the twenty-second and twenty-third regiments were stationed there. The pond has for many years afforded a desirable location for summer residents, and the estate of Mr. Henry Saltonstall (on the Peabody side of the line) has long been noted for the attractiveness of its situation. Mr.

D. P. Ives has also recently built a summer residence on the margin of the pond.

Humphrey's Pond was so named from John Humphrey, who, in the early settlement of the country, received from the king a grant of five hundred acres of land, which included this sheet of water. Humphrey married a daughter of the Earl of Lincoln, and sister of the Lady Arabella Johnson. Suntang Lake is a later designation for this pond, and one which is growing into common use. The region about the pond is high land. The pond itself has a small water-shed, and, as no stream flows into it, it is believed to be supplied from springs. The streams which flow from it, on either side, are tributary to the Saugus and Ipswich rivers. Its high position and the great purity of the water have combined to cause the pond to be frequently spoken of as desirable in supplying other and larger places with water for domestic purposes, though as yet no steps have ever been taken in this direction. There is an island in the pond, and it is recorded that, in the early days of the settlement, munitions were stored there "for the time of need."

Robin's Rock, about half a mile from the hotel, is a big rock with a hollow in the top, which is said always to contain water. The ledge is granite, of very excellent quality, and Prof. Hitchcock says it cannot be distinguished from that of Quiney. In August, 1849, a company was formed here for the purpose of working this quarry; but the transportation facilities not being all that was desirable, the work was finally relinquished. Of late another part of the quarry is being worked by parties from Peabody, and there is no reason to doubt that eventually it will be worked quite extensively.

Gen. Josiah Newhall, who is now in the neighborhood of eighty, is a man of much activity, and retains the full enjoyment of all his faculties. He moves about with the

briskness of a man of fifty, and feels a warm interest in the history and welfare of his native town, as well as in all objects that come under the special cognizance of the Essex Institute. He was born on the spot where he now lives, in a house built by his grandfather a hundred and twenty-five years ago; his present house having been built by himself in 1823. Nearly or quite all the trees growing about and near his premises were planted by himself, and the interest in his grounds was enhanced, to many of the party, by the fact that he has as many as fifty bearing fig trees, which are annually removed to his cellar before the cold weather begins, and again set out in spring. He has also one pomegranate tree or bush. During the day his house was thrown open to the party, and he kindly provided tea and lemonade for their refreshment.

The afternoon meeting was called to order at a quarter before three—the PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From George Arnold, Boston, July 11; J. W. Chadwick, Brooklyn, New York, June 19; W. H. Demmet, Boston, June 21; Samuel A. Drake, Boston, July 28; Samuel G. Drake, Boston, July 24; W. H. Eaton, Amesbury, June 25; Charles Hallock, New York, July 22, 26; W. P. Lunt, Boston, July 18; W. H. H. Marsh, Salem, June 21; Alfred Osgood, Newburyport, July 10; James Perkins, Boston, July 7; S. J. Spalding, Newburyport, June 26; H. L. Williams, Salem, July 19; American Pomological Society, Circular, 11th Session; Brazil, Legaçao do, Washington, June 10; Belgique, Société Entomologique de, fev. 3; Erlangen, Die physikalisch-Medizinische Societät in, 3, 2, 73; Frankfurt a M., Naturforschenden Gesellschaft, Jan. 10; Freiburg, Die Naturforschende Gesellschaft, Marz 16; Liverpool Literary and Philosophical Society, April 9; Lisbonne, L' Académie Royale des Sciences, March 26; Riga, der Naturforscher Verein zu, Nov. 1; Hobart Town, Royal Society of Tasmania, Nov. 28; Washington, Smithsonian Institution, July 22, 28.

THE LIBRARIAN reported the following additions :—

By Donation.

ALLEN, JOHN FISKE. Boston Cultivator for 1871, 1872. Christian Register for 1871, 1872.

BUTLER, B. F., M. C. Memorial Address on Hon. Garrett Davis, Dec., 1872. Compilation of the Internal Revenue Laws of the U. S., Jan. 6, 1872.

- EMERSON, GEO., B. Massachusetts Teacher, 9 numbers.
- FOOTE, C. Files of several County Papers for April, May and June, 1873.
- FOOTE, H. W., of Boston. James Freeman and King's Chapel, 1782-87. A Chapter in the early History of the Unitarian Movement in New England. Sixth Annual Report of the Directors of the Mass. Infant Asylum, April 1, 1873.
- GREEN, S. A., of Boston. Miscellaneous pamphlets, 16.
- HITCHCOCK, GEO. B., of San Francisco. San Francisco Directory, 1850. 1 vol. ISMO. Hand-Book Almanac for the Pacific States, 1863. 1 vol. 12mo.
- HUMPHREYS, Brig. Gen. A. A., of Washington. Report on the Potomac Aqueduct of the Alexandria Canal, 1835-40. 1 vol. 4to.
- LEE, JOHN C. Commercial Bulletin for June 7, 14, 21, 28. July 5, 12, 19, 1873.
- LORING, GEORGE B. Thirty-sixth Annual Report of the Board of Education, Jan., 1873. 1 vol. 8vo. Thirtieth Registration Report of Mass., 1871. 1 vol. 8vo. Ninth Annual Report of the Board of State Charities, 1871-72. 1 vol. 8vo. Agriculture of Mass., by C. L. Flint. 2d Series, 1872-73. 1 vol. 8vo. State Board of Health of Mass., Jan., 1873. 1 vol. 8vo. Miscellaneous pamphlets, 3.
- NATIONAL ASSOCIATION OF WOOL MANUFACTURERS. Bulletin for April-June, 1873.
- NORTH CHURCH AND SOCIETY. First Centenary of the North Church, Salem, 1772-1872. 1 vol. 8vo.
- PERKINS, JAMES, of Boston. Half Century Membership in R. W. Charles W. Moore in Lodge of St. Andrew, Boston. 1 vol. 8vo.
- PHILLIPS, STEPHEN H., of San Francisco. San Francisco Directories for 1867-68, 1868-69. 2 vols. 8vo.
- SAVILLE, J. H., of Washington, D. C. Report of the Board of Civil Service Examiners for the Treasury Department, Jan., 1873.
- STICKNEY, M. A. Miscellaneous pamphlets, 25.
- STONE, Mrs. J. H. Boston Almanacs, 1839-1862. 29 vols. 16mo. Salem Directories, 1837, 1842, 1846, 1850, 1853, 1855, 1857, 1859, 1861. 9 vols. 12mo. American School Hymn Book. 1 vol. 16mo. Oliver Optics, 39 numbers. The Churchman, 50 numbers. Farmer's Monthly Visitor, 36 numbers. Boys' and Girls' Weekly, 27 numbers. Miscellaneous pamphlets, 77.
- UPHAMS, W. P. Centennial of the Boston Pier, or Long Wharf Corporation, 1873.
- U. S. PATENT OFFICE. Official Gazette for June 3, 10, 17, 24. July 1, 8.
- VALENTINE, MTS. Geological Survey of Park County, by B. C. Hobbs, LL.D.
- WILLIAMS, HENRY L. Miscellaneous pamphlets, 67.
- WINTHROP, ROB'T C., of Brookline. Dedication of the Brookline Town Hall Feb. 22, 1873.

By Exchange.

- ACADEMIA REAL DAS SCIENCIAS IN LISBOA, PORTUGAL. Lendas da India por Gaspar Correa, Tomo i, parts 1, 2. Tomo ii, parts 1, 2. Tomo iii, parts 1, 2. Tomo iv, parts 1, 2, 1859-1866. Journal de Scienicias Mathematicas, Tomo i, ii, iii, 1868-1871. 3 vols. 8vo.
- ACADEMIE ROYALE DES SCIENCES, ARTS ET BELLES-LETTRES IN CAEN. Mémoires, 1873. 1 vol.
- AMERICAN ACADEMY OF ARTS AND SCIENCES, BOSTON. Proceedings of, pp. 409-501, 1872-3. 8vo pamphl. Memoirs of, New Series. Vol. ix, part 2.
- AMERICAN PHILOSOPHICAL SOCIETY. Proceedings of the, May-June, 1873.
- BIBLIOTHEQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences Physiques et Naturelles. Nos. 182, 183, 184. Feb., March, April, 1873.
- BUFFALO SOCIETY OF NATURAL SCIENCES. Bulletin of. Vol. i. No. 1. April, 1873.
- CANADIAN INSTITUTE. Journal of Science, Literature and History. May, 1873.

- CINCINNATI PUBLIC LIBRARY. Annual Report of the Common Schools of Cincinnati. 1872-3. 1 vol.
- CROSSE ET FISCHER. Journal de Conchyliologie. 3e Série, Tome xii, No. 4, Tome xii, No. 1. 1872-73.
- DER PHYSICALSCH-MEDICINISCHEN, SOCIETAT IN ERLANGEN. Sitzungsberichte, iv Heft. Nov., 1871-Aug., 1872.
- GEORGIA HISTORICAL SOCIETY. Proceedings, Resolutions and Communications of the Hon. E. J. Harden.
- GESELLSCHAFT NATURFORSCHENDER FREUNDE IN BERLIN. Sitzungsberichte. Jahrg. 1872. 1 vol.
- IMPERIAL GOVERNMENT OF BRÉSIL. Climats, Géologie, Faune et Géographie botanique du Brésil. 1 vol. Svo.
- INSTITUT HISTORIQUE IN PARIS. L'Investigateur, Nov., 1872-Jan., 1873. 38e Année.
- IOWA STATE HISTORICAL SOCIETY. The Annals of Iowa, April, 1873.
- K. K. ZOOLOGISCHE BOTANISCHE GESELLSCHAFT IN WIEN. Verhandlungen, Bd. xxii, 1872. 1 vol.
- KÖNIGLICHE BAYERISCHE BOTANISCHE GESELLSCHAFT IN REGENSBURG. Flora. 1872. 1 vol.
- L'ATHÉNÉE ORIENTAL IN PARIS. Bulletin, 10 Année, No. 13. Juin, 1869.
- LIVERPOOL LITERARY AND PHILOSOPHICAL SOCIETY. Proceedings, Vol. xxvi, 1871-72.
- MASSACHUSETTS HISTORICAL SOCIETY. Proceedings of. 1871-73. 1 vol.
- NATURFORSCHENDEN GESELLSCHAFT IN EMDEN. Jahresbericht, 1871.
- NATURFORSCHENDE GESELLSCHAFT ZU FREIBURG. Berichte, Bd. vi. Heft 1, 1873, NATURFORSCHENDE VEREIN IN BRÜNN. Verhandlungen. Bd. x, 1871. 1 vol.
- NATURWISSENSCHAFTLICHEN VEREINE ZU BREMEN. Abhandlungen, iii Bd., 3 Heft, 1873. Beilage, No. II, zu den Abhandlungen des.
- NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Genealogical and Antiquarian Journal, July, 1873.
- NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record, July, 1873.
- PEABODY INSTITUTE OF BALTIMORE, MD. Sixth Annual Report of the Provost to the Trustees, June 5, 1873.
- PHILADELPHIA ACADEMY OF NATURAL SCIENCES. Proceedings of, Pt. i. Jan.-Feb., 1872.
- PHYSIKALISCHE-MEDICINISCHE GESELLSCHAFT IN WURZBURG. Verhandlungen, Nene Folge. Bd. iii, Heft iv, 1872. Svo pamph.
- RHODE ISLAND HISTORICAL SOCIETY. Proceedings of the Society for 1872.
- ROYAL SOCIETY OF TASMANIA. Monthly Notices for 1871. 1 vol. svo. Meteorological observations at Hobart Town, Result of five years. Tasmania, 1872.
- SENCKENBERGISCHE NATURFORSCHENDE GESELLSCHAFT. Bd. viii, Heft 3, 4.
- SMITHSONIAN INSTITUTION. Smithsonian Contributions to Knowledge. Vol. xviii.
- SOCIÉTÉ D'ACCLIMATION IN PARIS. Bulletin Mensuel, 2me Série, Tome ix, No. 12, Dec., 1872.
- SOCIÉTÉ ROYALE DES ANTIQUAIRES, DU NORD A COPENHAGUE. Mémoires, Nouv. Série, 1872. Tillæg til Aab ger for Nordisk Old Kyndlighed og Historie-Aargang, 1872.
- VEREINS FÜR ERDKUNDE IN DARMSTADT. Notizblatt, Heft xi, No. 121-132, 1872.
- ZEITSCHRIFT FÜR DIE GESELLSCHAFTEN NATURWISSENSCHAFTEN IN BERLIN. Bd. v. vi. Neue Folge, 1872. 2 vols.
- ZOOLOGISCHE GESELLSCHAFT. Zoologische Garten, xiii Jahrg. Nos. 7-12, 1872.

ZOOLOGISCH-MINERALOGISCHER VEREIN IN REGENSBURG. Correspondenz-Blatt, xvii Jahrg. 1872. 1 vol.

PUBLISHERS. American Naturalist. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Observer. Silliman's Journal. Western Lancet.

The PRESIDENT in his opening remarks alluded to the pleasure that he had always derived, even in childhood from rambling over these hills, fishing in the pond near by and collecting flowers from the meadows and fields. Since the organization of the Institute, four meetings have been held in this place and vicinity. The second field meeting took place in this town, July 24, 1849 (the first having been held in Danvers in the same year). Among the noticeable productions were the locust trees (*Robinia pseudacacia*), large and vigorous, and free from the borer. The serpentine ledges were also duly investigated and discussed at the afternoon session, in the house of the late Asa T. Newhall, Esq. On October 15, 1856, another meeting was held at the house of Rev. A. P. Chute, who had a fine collection of shells and minerals, a meeting having been attempted one day in the August previous, that failed on account of a drenching rain. On June 26, 1861, another meeting took place, at which Rev. E. B. Willson presided; and this was the last that had occurred in the town previous to the one this day, except the meeting at Lynnfield Centre, in August, 1858.

The President alluded to the recent death of a corresponding member, Col. JOHN WELLS FOSTER, who died at his residence in Hyde Park, Chicago, on Sunday, June 29, 1873, aged fifty-eight, one of the most eminent persons of the city of his adoption. He was born at Brimfield, Mass., in 1815; his profession was civil engineering and at an early period of his career he began to follow the bent of his genius. He was prominent in Massachusetts

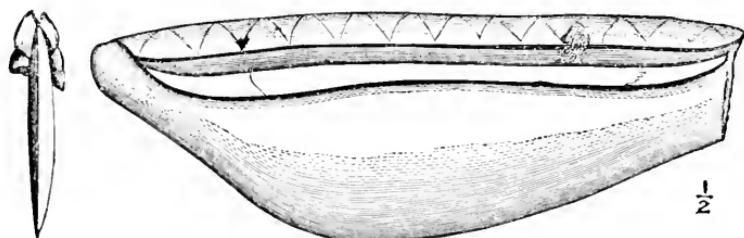
polities from 1854 to 1857. About 1858 he removed to Chicago. His rank as a *savant* was at the very front and his reputation world-wide.

Mr. F. W. PUTNAM being called upon spoke of Col. Foster's eminence as a geologist and archaeologist. He was also one of the early government surveyors, and with Prof. Whitney, surveyed the mineral regions of Lake Superior, their joint report being printed by the United States government. Col. Foster had made several discoveries in geology and especially in connection with the formation of the Laurentian hills. Of late years he paid especial attention to the study of the mound-building race, and only a few days before he died, his volume on the prehistoric race of America was published.

Mr. PUTNAM then proceeded to speak of toads and fishes. The young toads now abound on the margin of the pond, having just passed from the tadpole state, the tail being nearly absorbed. Mr. Putnam described the hatching and growth of the tadpoles. They are first provided with external branchiae which are soon lost, and the internal gills are developed; these are in turn absorbed and, the lungs developing, the young toads are gradually forced to seek air above the surface of the water. They then rapidly assume their perfect form, leave their aquatic life and become terrestrial animals. To-day we have seen myriads of young toads undergoing this important change, and these young will probably remain along the damp margin of the pond until a warm rain comes, which will induce them to wander off, and, as in the course of their march they will possibly be seen by persons, perhaps in the act of crossing a street or garden, it is very likely that we shall hear of another instance of "toads raining down."

Mr. Putnam, in his remarks upon the fishes, confined himself to the structure of the skeleton, pointing out the homologies of the various bones with those of higher animals, and the adaptation of the fish structure to the special purposes for which it was designed.

Mr. PUTNAM stated that since the Amesbury Field Meeting he had received from Capt. J. A. Greely, of Amesbury, a drawing of an Indian knife which differed in details somewhat from any that he had mentioned in a former communication to the Institute (see p. 111). This knife was said by Capt. Greely to be made of "red slate." It is nearly perfect, one end only being broken off, as shown in the figure. Allowing for this missing



Knife made of "red slate" from Kingston, New Hampshire. One-half natural size. Side view and section.

fragment the knife was about seven inches long; the back is three-quarters of an inch deep and the blade about one and one-half inches. The thickness of the blade in the centre is about three-tenths of an inch. The peculiar workmanship of the back, as shown in the section, in the form of a series of uneven knobs, was probably intended to give firmness to the hold when grasped by the hand. This specimen was found in a sand deposit near Kingston Falls, Kingston, New Hampshire. The figure, which is from the drawing of Capt. Greely, represents the knife of half its size.

The PRESIDENT read the following communication from N. Cleaveland, Esq., in connection with the presentation of the herbarium therein referred to, and several specimens in mineralogy collected near Erzroom in Asia Minor :—

"The collections and insertions in this herbarium were begun by OLIVER ALDEN TAYLOR in 1824, he being at that time a student in Union College, Schenectady. It was by the advice of Dr. Yates and for the benefit of his health that he engaged in botanical study and pursuits. The taste and habits then formed continued through life, as the entries in this *hortus siccus* abundantly show. In Andover, where for many years he lived a laborious student-life, in Manchester, Mass., where his last years were spent in faithful pastoral work, and in every journey that he made, he seems to have kept up the practice of observing, collecting and examining plants.

The book is presented to the Essex Institute, not as containing anything of special interest for scientific men, but as a curious record of painstaking study and care on the part of one who was always earnestly devoted to other researches, and eminently successful in them. To any who may chance, hereafter, to glance at these dry leaves and stems and flowers, and who may never before have heard of him who gathered and placed them here, let me say that the Rev. Mr. Taylor was not only an amiable and good man, but distinguished, also, for varied learning and great philosophical attainments. In evidence of this it will be sufficient to state that he at one time acted as assistant professor of Biblical Literature in the Andover Divinity School, and that the celebrated Edward Robinson, when contemplating a long absence from his post, for European and Asiatic travel, earnestly requested Mr. Taylor to fill his place in the department of Biblical and Oriental learning at the Union Theological Seminary of New York. Mr. Taylor died (1851) at Manchester, Mass."—N. C.

These mineralogical specimens were sent in 1845 from

Erzroom in Asia Minor by Rev. Jonah Peabody to Rev. O. A. Taylor. Mr. Peabody, a native of Topsfield, Essex County, Mass., was then living at Erzroom, as a missionary of the American Board.

In Mr. Taylor's Journal (See Memoir of Rev. O. A. Taylor, p. 402) he mentions the receipt of the present, thus:—"To my wife was sent a bottle of water from the Euphrates; to me lava one thousand years old from near Khoy; marble from the Chifteh minaret; lava from Hassan Kulaah, or, as is supposed, the ancient Theodosiopolis; lava from near the base of Mt. Ararat."

Rev. E. C. BOLLES, of Salem, said that in dredging in Humphrey's Pond he had found only four species of shells. This pond is very free from animals, and it contains less parasitic life than usual. The dredge brought up only one form of vegetable life in profusion—that being one of the green globular algæ, each specimen of the size of a buckshot. He then alluded to certain forms of sponges found in the pond, and of the different varieties, the horny, flinty and limy sponges. Sponges are animals, and he explained how they lived, the system of circulation by which they are sustained, and the progress of their growth. The examples from this pond were all of the common *Spongilla fluviatilis*, and exhibited not only the green porous structure of the sponge, but the embedded gemmules, which in time would float out upon the water, and each one would attach itself to some object and develop into the characteristic green mat of the spongilla. The fresh-water sponges have been made a special subject of study by Mr. Carter, an Englishman living in India. Great masses of spongillæ of various species are to be found in the fresh-water tanks in Bombay and other East Indian cities.

Mr. JOHN ROBINSON, of Salem, the Recording Secretary, exhibited and explained some specimens of the wild flowers and ferns that had been gathered, and also made commendatory reference to the fig and pomegranate trees grown by Gen. Josiah Newhall. In explanation of the growth of figs, he said that it was an error to suppose that they had no blossoms, for great numbers exist, though of small size.

Rev. S. H. TAFT, president of Humboldt College, Humboldt County, Iowa, on being called upon, expressed his pleasure at being here, and also at seeing so large a representation of the Essex Institute at his college in Iowa, on the occasion of the meeting of the American Association for the Advancement of Science at Dubuque last year.

Gen. JOSIAH NEWHALL, of Lynnfield, being called upon, spoke of the general situation of the town, with particular reference to its water facilities.

Mr. N. A. HORTON, of Salem, after making some remarks upon the day and the unusual heat, gave a brief résumé of the rambles of his party, and offered the following resolution, which was unanimously adopted :—

Resolved, That the thanks of the Essex Institute be tendered to Gen. Josiah Newhall, Messrs. J. B. C. Fuller and Joseph Brown for their courtesies and attention during the day; to Mr. G. Saltonstall for the use of his boats; and to the Congregational Society for the use of their church.

BULLETIN

OF THE
ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., AUGUST, 1873. No. 8.

One Dollar a Year in Advance. 10 Cents a Single Copy.

FIELD MEETING AT CHEBACCO POND, TUESDAY, AUGUST 12, 1873.

By the kind invitation of Messrs. J. Whipple & Sons, who have for more than ten years successfully kept the Chebacco House at this place, the Institute held a field meeting, this day, in this rural retreat which has grown in public favor and has become quite celebrated for its great beauty and general attractiveness. The particular charm of the place, however, to many people who have a taste for natural scenery and productions, is in spending a quiet day here in small parties. The winding road through the woods, which leads to the place, is very attractive. The ponds, five in number, abound in fish and pond lilies. All the ponds are quite deep and afford good boating places, but the boats are generally concentrated on Chebacco Pond, which lies partly in Essex and partly in Hamilton. This is a large sheet of water, and its many

indentations render it very attractive to sailing parties and amateur explorers. The place is also one of great interest to the students of our local botany.

In point of numbers the attendance at the meeting was unusually large, and a number of persons proficient in scientific pursuits were present and consequently a great amount of scientific work was performed in the gathering of zoological and botanical specimens and a greater and better variety has seldom been collected.

The meeting was called to order by the PRESIDENT, on the platform in the grove, at a quarter before two o'clock, and the Secretary read the proceedings of the meeting at Lynnfield.

The SECRETARY announced the following correspondence :—

From H. W. S. Cleveland, Chicago, Ill., Aug. 6; Charles F. Crocker, Lawrence, Aug. 11; Charles B. Rice, Danvers Centre, Aug. 13; John J. Somes, Gloucester, July 29; American Geographical Society, July 21; Christiana, Det. Kgl. Norske Universitet, Janvr; La Société Royale des Sciences et des Lettres de Throndhjem.

The LIBRARIAN reported the following additions :—

By Donation.

CROCKER, CHARLES F. of Lawrence. History of Lawrence. 1 vol. 8vo. Lawrence, 1858. Catalogue of the Lawrence Public Library. 1 vol. 8vo. Lawrence, 1873. Anniversary Services of the Grace Church, Lawrence, Oct., 8, 10, 11, 1871. MILLS, R. C. Nation for 1859, 1870, 1871, 1872. The Week for 1868. SAUNDERS, Miss. Nuevo Testamento. 1 vol. 12mo. Conquest of Mexico. 2 vols. 8vo. Dictionary of the Spanish and English Languages. 2 vols. 8vo. Ai Vola Ni Veryalayalati Vov ni Anda Twaga kei Na Nodai Vakabula Ko Jisu Kraisita. 1 vol. 12mo.

U. S. PATENT OFFICE. Official Gazette, July 15, 1873.

WILLSON, E. B. Miscellaneous pamphlets, 14.

By Exchange.

BUFFALO SOCIETY OF NATURAL HISTORY. Bulletin of. Vol. i, No. 2.

IOWA STATE HISTORICAL SOCIETY. The Annals of Iowa for July, 1873.

KONGELIGE NORSKE VIDENSKABERS-SELSKABS IN THRONDHJEM. Skrifter i det 19de Aarhundrede 7de Binds 1ste Heft. 8vo pamph.

PHYSIKALISCH-MEDICINISCHE GESELLSCHAFT IN WÜRZBURG. Verhandlungen Neue Folge, iv Bd., i Heft. 8vo pamph.

SOCIÉTÉ VAUDOISE DES SCIENCES NATURELLES IN LAUSANNE. Bulletin. Vol. xi. No. 68. 8vo pamph.

UNIVERSITÉ ROYALE DE CHRISTIANIA. Forhandlinger i Videnskabs-Selskabet Aar, 1871. 8vo pamph. Animal Life, by Geo. O. Sars. 4to pamph. Forekomister af Kise i Norge, by A. Helland. 8vo pamph. Anden Beretning von Ladegaardsens Hovedgaard, Forse Hefte. 4to pamph. On the Rise of Land in Scandinavia, by S. A. Sexe. 8vo pamph.

PUBLISHERS. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Silliman's Journal.

The PRESIDENT in his opening remarks alluded briefly to two ranges of territory located in the southern part of Essex County, favorable for the pursuit of the naturalist, and more especially of the botanist. One is a tract extending inland from the shores of Swampscott and Marblehead, and lying within the limits of Marblehead, Swampscott, Lynn, Salem, Peabody and Lynnfield, very diversified with rough and craggy hills, bowlders, beautiful ponds, woods and meadows, the habitat of many rare floral gems; with this tract is associated the name of Dr. Andrew Nichols, who was one of our most noted local botanists. He delivered a course of lectures on botany as early as 1816, and was the first President of the Natural History Society. He died in the spring of 1853, as the little *Draba verna*, a plant he took delight in finding, was expanding its tiny petals to another vernal season. The other is the range of woods in which we are now assembled, extending from Beverly to Gloucester and lying within the limits of these and the intermediate towns. Here are found many rare plants, as the Magnolia, Kalmia, Linnea, Cornels, etc. These woods may be considered, to an Essex County botanist, hallowed ground: here Dr. Cutler, some ninety years since botanized, and prepared in 1784 "An account of some of the vegetable productions naturally growing in this part of America, botanically arranged," which was printed in the first volume of

the "Memoirs of the American Academy of Arts and Sciences." He also formed an arboretum of considerable extent adjoining his residence, and may be considered as one of the pioneers in botanical science in this country. He died July 28, 1823, having enjoyed in an eminent degree the confidence and honor of his fellow men. Dr. George Osgood of Danvers, as a pupil and friend of Dr. Cutler, may be mentioned in this connection. He was present at a meeting in this place some thirteen years since, and alluded to his residence in Hamilton about the beginning of this century, to his rambles through these woods with the venerable Cutler, from whose lips he learned his first lessons in botany and the study of nature, and during a long life had continued his interest in these pursuits, having derived from them much pleasure, happiness and instruction. He died May 16, 1863, at the age of fourscore. Dr. Osgood always spoke with much pride of the late William Oakes as once his pupil, who was wont to accompany him in his rambles and from him imbibed a taste for, and soon eclipsed his old instructor in botanical attainments. Mr. Oakes was a resident of the old town of Ipswich, and made extensive collections of plants gathered in these woods, and the name of Manchester had become famous as a botanical region, from being attached to the specimens which he preserved and so widely distributed.

The President then alluded briefly to some of the pleasing associations that cluster around this place. He spoke of an informal gathering of several members of the Natural History Society in July, 1836, when Benjamin Hale Ives, a very enthusiastic student of nature, was present and took a very active part in all the proceedings. By him more perhaps than by any other was the foundation laid upon which the present superstructure of our

organization has been erected. He died on the twenty-sixth of the January following, at the age of thirty. At a meeting in 1850, a few members, consisting of Drs. A. Nichols and George Osgood, and Messrs. S. P. Fowler, Thomas Cole, George D. Phippen and others made explorations to collect specimens and then met in the parlor of the old farm-house,* that stood on the site of the present Chebacco House, to talk over such scientific topics as the occasion might have suggested. He also spoke of the meetings in 1860 and 1862. On these two occasions our friend Hon. Allen W. Dodge, who is with us this day, presided, and cordially welcomed the members and their friends to the town of his adoption. The numbers in attendance were large, and the meetings were very successful.

The President then introduced Mr. GEORGE D. PHIPPEN, one of the early members of the Natural History Society, who was present at the early meetings of the society in this place, and has always taken a great interest in its proceedings.

Mr. PHIPPEN then came forward and made further reference to the early explorations referred to, and alluded to the progress made in science not only from the early times of Winthrop, but through the influence of meetings such as these. He considered Dr. Cutler the first botanist who was indigenous to the soil, but he referred not only to him but also to the late Dr. George Osgood of Danvers,

*The house was a good specimen of the farm-houses of the last century, one story, gambrel roof in front and lean-to in the rear, running down near to the ground. In the open lawn in front was the well with a long well sweep; around and near it stood four ash trees, planted there, saith tradition, to keep the snakes from the well. It was known as "Knowlton's," being owned and occupied by an elderly lady of that name. Small parties frequented the place, bringing with them their own supplies. Mrs. Knowlton would prepare the repast, and a small fee and the remnants of the feast were considered an ample compensation.

and others with whom he had himself rambled and pursued botanical investigations.

The President then called upon Hon. ALLEN W. DODGE of Hamilton, to tell the company what he knew about the Rev. Manasseh Cutler.

Mr. DODGE said that Mr. Cutler was the second minister of the Hamlet Parish, as it was called at the time of his settlement, in 1771, it being a part of old Ipswich, from which it was set off in 1793, and given its present name, in honor of Alexander Hamilton, of whom the doctor was an ardent admirer,—his parishioners sharing in his feelings. Of the doctor, personally, Mr. Dodge said his reminiscences were rather dim, but he well recollects hearing him preach in his own pulpit, after he was compelled to sit through the sermon, as he did for years, owing to the asthma. He also remembered him at a large social gathering of the Col. Robert Dodge family, to which he (Mr. Dodge) belonged, when the doctor was the life of the party. It was at the same ancestral farm that witnessed these festivities that, at an earlier period, on the occasion of a barn-raising, the doctor led off a dance on the green with one of his church members, grandmother to the speaker, against which neither tradition nor the church record bears traces of any remonstrance. He was, in truth, always ready to contribute to the innocent recreation of his people, ready to minister to their wants, physical as well as spiritual, and ready to make the common schools of the town preëminently thorough in their instruction. To interest the people in the schools, he early instituted the custom of each committeeman giving either a dinner or a supper at every examination day; and on these occasions the doctor made even the roast turkeys and plum puddings to help on the good cause.

To show how free and familiar with him were his own people, one of them having written a work on the cultivation of the potato, and taken it to him for revision, said as he was leaving the house, "Now, docto[r], if you think it worth printing, just stick in a little religion, now and then, and it will sell all the better!" Grotesque as this may seem to us, it was strictly in accordance with the times. That rare little book, by Dr. Jared Elliott, of Killingly, Conn., entitled "Field Husbandry in New England, as it is, or may be ordered," is interlarded with Scripture texts. As a specimen, after giving various receipts relating to the protection of crops and animals, he says he shall close the chapter with one receipt more, which is infallible and invaluable: "Seek first the kingdom of God and His righteousness, and all these things shall be added unto you."

Doctor Cutler was born in Killingly, Conn., May 3, 1742 (where Elliott, the author of this quaint old work, lived, preached and wrote); graduated at Yale College in 1765. He studied law and was admitted to the bar in 1767. Soon after quitting this profession he prepared for the ministry, and here entered on its duties, his first and only charge extending over a period of more than fifty years. Of course he lived in the war of the Revolution—the time that tried men's souls—and he served in it as a chaplain. On his return he studied medicine and practised as a physician among his parishioners for years after. As a preacher he was sound and instructive, not given to flights of oratory, but more intent on the edification of his hearers. He was a prompt man in the discharge of ecclesiastical as well as secular duties. Once, at a meeting of the Bible Society of Salem and its Vicinity, a question arose at the preliminary meeting, whether or not it should be opened with prayer.

The discussion began to wax warm, when the doctor, who was presiding, rapped on the desk and said, "Gentlemen, while the propriety of the duty is being discussed, the duty itself might have been performed. Let us pray!"

He received as boarders in his family, young men from out of town to fit for college, mercantile pursuits and navigation. He was well versed in astronomy, and for years kept a minute diary of the weather, the temperature, the winds, the diseases and the seasons, a couple of these manuscripts from 1780 to 1790, being among the archives of the Institute, witnesses of his painstaking accuracy in this department. But he was best known to his contemporaries by his knowledge of botany, both practical and scientific. He contributed to the Memoirs of the American Academy, papers on this and other scientific subjects. He was well known abroad, and his society and conversation were sought by many an intelligent foreigner. Among others was Count Castiglione, a distinguished Italian, who travelled in this country in 1785-7, and in his book speaks of his visit to Dr. Cutler. Doubtless he roamed with him through these woods, guided by him to rare and beautiful plants. The doctor's garden was full of flowering plants and trees. Among the rest was a grand old tulip tree, that lived to show, spring after spring, by its gorgeous blossoms, the worth of such a man, not to distant places only, but to his neighborhood as well, long after he had gone to his rest.

The efforts of Dr. Cutler in securing the passage by Congress of the ordinance of 1787, by which freedom was decreed to the whole northwestern territory, are perhaps not so fully known as in justice to him they should be. Mr. Webster was accustomed on all fit occasions to speak of them in terms of highest commendation.

tion. More recently, Mr. Poole, of the Cincinnati public library, has given a graceful and thorough account of them. Soon after, he organized, in Ipswich and the neighboring towns, the first band of pioneers for the settlement of Ohio. They took their departure from his door in a large wagon, bearing the inscription "Ohio, for Marietta on the Muskingum," firing a salute to the doctor with the muskets with which they went armed. They were followed the year after by Dr. Cutler himself, who rode all the way in a sulky, accompanied by a few friends.

In 1800, in acknowledgment of his signal services to the country and his vast acquaintance with men and affairs, he was chosen a representative to Congress. He served two terms in this capacity, his people at home willingly acquiescing in an arrangement that was so honorable to the man whom they loved and reverenceed. It was on his visit to Philadelphia in 1787, while the Constitutional Convention was in session and while he was negotiating for the purchase of the Ohio lands, that he stopped at the house of Dr. Franklin, with whom he had corresponded, and found him at tea with his family on the lawn in the rear of the house. Of this interview he wrote out a full account. It is said to contain the best description of the great philosopher and statesman, both of his personal appearance, manners and dress, that has come down to us. It is copied by Sparks, in his life of Franklin, and is well worth the reading by every one who would get a most striking picture of him. But, said Mr. Dodge, the whole subject is too fascinating to be disposed of in a few brief remarks. He hoped that a full account would be given by one who had for years been gathering the materials for it, and was abundantly able to do justice to it—he alluded to the Rev. Edwin M. Stone, of Providence, R. I., formerly of Beverly in this county.

Prof. ASA GRAY, of Harvard College, in speaking of the flowers about us and those found during the morning, alluded to plants having peculiar properties or aptitudes, and particularly treated of the so-called pitcher-plant (*Sarracenia purpurea*). One will ask what these pitchers are for, and looking into them we shall find a little dirty water and few or many flies or other insects drowned in it; now if we notice this "sun-dew" (*Drosera*), we shall see that flies, when they alight on the leaf, are caught and held fast by the clear drops which tip every one of the bristles that beset its upper surface. And, as if to make sure of this, within a few hours the surrounding bristles, which the fly had not touched, bend in one by one, and bring their sticky glands into contact with the fly, thus multiplying the bands that held him. Soon the leaf itself is seen to close round the insect, just as a man might close his hand, say upon a mouse. Now, before we make up our mind that this capture is accidental and meaningless, it is as well to consider why flies are more expeditiously caught by a near relative of the sundew, viz., the Venus-fly trap (*Dionaea*), of North Carolina. Here, when the fly alights on the leaf the two sides come together with a sudden motion; and the bristles, which are all on the margin, and destitute of sticky glands, by their intercrossing prevent escape, until the sides of the trap have closed down firmly upon the imprisoned insect.

Returning now to our pitcher-plant, it is naturally asked, What attracts the flies that are so copiously drowned in the water at the bottom? In this our northern species we know of no attraction beyond the water itself. But in at least one of the southern species (*Sarracenia flava*) a correspondent informs us that he has noticed a sweetish secretion just over the top of the tube, which is eagerly

sought by flies, and which intoxicates them, so that they fall into the pit below. Once there, the stiff hairs of its lining, which, as in the species before us, all point downwards, prevent all return. Dr. Gray had this summer verified this statement as to the existence of the attractive secretion. Now in the case of the Dionaea the fly, after being caught, is *soon covered with a secretion from the inside of the leaf, and finally absorbed*, except the tough and fibrous parts: then the leaf opens and may catch another fly. Reasoning from this to the sundew, it may be inferred that this also catches flies with intention, and it may be suspected that either the juices of the fly are absorbed through the sticky glands, or that the ammonia etc., which is given off in decomposition is absorbed,—in either case affording food to the plant. And finally, if pitcher-plants are contrivances for catching insects, as they seem to be, Dr. Gray thought it most likely that the water they contain, charged as it is with the products of animal decomposition, is actually absorbed by the plant as a liquid manure, to its benefit.

S. B. BUTTRICK, of Salem, presented the following list of plants collected during the forenoon's excursion:—

- Nemopanthes Canadensis, Mountain Holly.
- Verbena hastata, Vervain.
- Myrica Gale, Dutch Myrtle.
- Aspidium marginale and others, Shield Fern.
- Rhexia Virginica, Deer Grass, or Meadow Beauty.
- Eriocaulon septangulare, Pipewort.
- Lycopodium lucidulum,
- Aralia hispida, Bristly Sarsaparilla.
- Gerardia maritima, Seaside Gerardia.
- Cornus Canadensis, Dwarf Cornel.
- Lycopodium dendroideum, Ground Pine.
- Spiraea tomentosa, Hardhack; Steeple Bush.
- Spiraea salicifolia, Meadow Sweet.
- Monotropa uniflora, Indian pipe.

<i>Decodon verticillatum</i> ,	Swamp Loosestrife.
<i>Pontederia cordata</i> ,	Pickerel Weed.
<i>Brasenia peltata</i> ,	Watershield.
<i>Nymphaea odorata</i> ,	Water Lily.
<i>Clethra alnifolia</i> ,	Sweet pepper Bush.
<i>Cassandra calyculata</i> ,	Leatherleaf.
<i>Cephalanthus occidentalis</i> ,	Buttonbush.
<i>Vaccinium oxycoccos</i> ,	Cranberry.
<i>Sarracenia purpurea</i> ,	Sidesaddle Flower.
<i>Drosera longifolia</i> ,	Long-leaved Sundew.
“ <i>rotundifolia</i> ,	Round-leaved “

Prof. GEORGE L. GOODALE, of Harvard College, after a few brief remarks on several of the plants which he had noticed during the forenoon's ramble through these woods, so rich with floral treasures and possessing so many attractions not only to the student in botany but the lover of the picturesque in natural scenery, gave an interesting account of the cross fertilization of plants by the agency of insects.

Mr. J. J. H. GREGORY, of Marblehead, expressed a desire to bring to the notice of the Institute the importance of teaching children the distinctive characteristics of the several poisonous plants and animals that are occasionally met with in their rambles; after some general remarks on this subject, he introduced the following resolution, which was adopted:—

Resolved, That so much instruction relative to insects, other animals and plants found in Massachusetts, should be given in her common schools, as shall enable the community to protect itself from bodily harm and banish all unnecessary fear.

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FIELD MEETING AT CHEBACCO POND, TUESDAY,
AUGUST 12, 1873.

[*Continued.*]

MR. F. W. PUTNAM spoke on the fishes of the pond and gave an account of the general structure of fishes, and of the characteristic habits of several species, especially noting the mode of spawning of the horned pout and the bream, and the care which the pouts take of their young for some time after they leave the spawning nest.

The fishes taken with the seine by himself and Mr. Cooke during the morning consisted of the following species:—

Pimelodus catus, Horned Pout, not fully grown; *Esox reticulatus*, Pickerel, not fully grown; *Leuciscus Americanus*, Shiner, adults and young specimens about one inch in length; *Leuciscus pulchellus*, Chub, young specimens; *Perca flavescens*, Perch, adults and half-grown specimens; *Labrax rufus*, White Perch, adults; *Pomotis vulgaris*, Bream, adults, and young of from one-half to one inch in length; *Hololepis fusiformis*, Little Darter, adults.

A few other species, as the redfin, the sucker, the barred bream, the short-nosed pickerel, the banded minnow and the eel, are found in the pond, but none were taken today. The black bass has also been introduced and is said to be increasing in numbers.

Of the reptiles and batrachians the following were collected in the pond and on its shores:—

Chrysemys picta, Yellow-bellied Turtle; *Ozotheca odorata*, Musk Turtle; *Rana fontinalis*, Green Frog; *Rana sylvatica*, Wood Frog; *Bufo Americana*, Common Toad, young specimens near the water.

Other species are also found here, as the snapping-turtle, the spotted turtle, several snakes, salamanders, three or four other frogs and the tree toad.

Three hauls of the dredge were made across the pond, but the bottom proved very muddy and only a few fresh-water clams were obtained.

Quite a number of aquatic insects were collected, of species common to our ponds.

A large green caterpillar was passed to the table, and Mr. Putnam gave an account of its habits and the transformations it would undergo in developing from its present state, when it is known as the tomato worm, or larva of *Sphinx quinquemaculata*, to that of its winged condition, when it would become a large moth.

After passing a vote of thanks to Messrs. John Whipple & Sons for the use of their grounds, and for courtesies and civilities extended on this occasion, the meeting adjourned.

FIELD MEETING AT DANVERS CENTRE, FRIDAY,
SEPT. 5, 1873.

THE fourth field meeting, the present season, was held at Danvers Centre, this day, postponed from the day preceding on account of unfavorable weather. The 9.25 train from Salem took the party to the Plains, where carriages were soon in readiness for conveyance to the meeting house, which was the place of gathering for the day. A somewhat informal meeting was then held, and the various points of interest designated, and then the party separated into groups and went in various directions, as inclination dictated; the botanists repaired to the woods; the larger portion, however, under the lead of very instructive guidance, visited several of the old houses that are invested with an historic interest; or the sites of others that had long since crumbled into dust, marked by a depression of the earth, with a few loose stones lying around.

The meeting house in which the party assembled is the one which accommodates the church and society that began in the year 1671, having been set off from the First Church in Salem at that time, and known in our early records as the Salem Village Church. The first house was built in 1671, and was connected with the witchcraft delusion and witnessed many of its trials. The second one was erected in 1700 upon the site of the present house, and stood until 1785, when it was voted to build another upon the same spot. This third house was destroyed by fire, Sept. 24, 1805. The society decided to have a new meeting house, which was built upon the same spot that the last house stood upon. This fourth house was of brick and was known as the "Brick Meeting

House." It was finished in 1806, and taken down in 1839, and in that year the fifth and present house was built. Rev. Charles B. Rice, the present pastor, was installed Sept. 2, 1863. His predecessors were James Bailey, 1671 to 1680; George Burroughs, 1680 to 1683; Samuel Parris, 1689 to 1696; Joseph Green, 1698 to 1715; Peter Clarke, 1717 to 1768; Benjamin Wadsworth, 1772 to 1826; Milton P. Braman, 1826 to 1861—a list of revered and honored names of men who, in their times, were distinguished for their learning and piety.

The general aspect of the town is rather level, though it is diversified with numerous elevations. The land appears to be well adapted to agricultural purposes, and is dotted with workshops of the manufacturing industries that add so much to the thrift of many of our New England towns.

The common at Danvers Centre is a place of some interest, from the fact that it was given to the village "for a training place forever," by the will of Nathaniel Ingersoll, the leading man of the village. It has doubtless been used as a parade ground from the earliest times; and the rudiments of military practice have probably here been imparted to those who have taken up arms against the Indians, the French and the British.

Danvers has, from the earliest times, been closely identified with the prominent events in our history. With the exception of the town most directly concerned by locality, it gave up more victims than any other in the Lexington fight. It was the abode of the first and also of the last British governor of Massachusetts. The Collins House, now owned by Mr. Francis Peabody, has been greatly improved by him without disturbing the old fashioned aristocratic appearance of the place, and is always an interesting object of contemplation, partly

from the beauty of its surroundings and partly from the fact that it is the place where Gov. Gage formerly had his headquarters. Gen. Gage, before he took command of the British forces in the colonies, was governor of Montreal. He did not succeed well as governor of Massachusetts, and went back to England before independence was declared, though he had enough to do with the inauguration of our revolution to set on foot the expedition which resulted in the battle of Lexington. He lived long enough to see our independence acknowledged, and died in 1787, the year when our present constitutional form of government was adopted. Gov. Endicott came over, the first governor, in 1628, and, on April 30, 1629, he was elected governor for one year; but, meantime, the charter and Company were transferred to New England, and John Winthrop, who had joined the Company, was elected governor six months afterwards. Gov. Endicott resided at what is now Danversport, and Gov. Gage, at the Collins house, as above stated, though it was but a temporary residence.

But the section of the town where the meeting was held is especially interesting from the fact that it was the region where most of the "Salem Witchcraft Delusion" took its rise. The first meeting house of Salem Village stood not many rods from the present structure, on Hobart street, near the house of Mr. Hiram Hook. The first minister of the Salem Village church was James Bailey, and he lived in a house occupying the site where now stands the house of Mr. Benjamin Hutchinson near the old road leading from the old meeting house to the Plains, and not far from the Tapleyville village. On this same road, not far from the Plains, and near the gravel pit, may still be seen the remains of the old cellar of the house of Nathaniel Put-

nam, who figured during the witchcraft period. It was one or more of his horses that George Jacobs, Jr., was charged with drowning, though with no very conclusive evidence, as the horses were trespassing, and were probably drowned while being driven away. With reference to Mr. Bailey, the first minister, it may here be said that great opposition arose to him during his ministry, and a series of serious troubles, jealousies and hard feelings followed.

The Samuel Parris house stood upon a piece of land now owned by Messrs. E. and A. Mudge, and was formerly a part of the parsonage. The place is marked by a signboard which bears this inscription : "Site of the first parsonage house occupied by Rev. Samuel Parris in 1692." It is believed that some of the material of which this house was built was put into a shed or outbuilding connected with the old Wadsworth house, which is on the main road, and not far distant. It has been supposed that the small building standing opposite and near to the Collins house was a part of the old Parris house; but this has been well ascertained not to be the case in the sense in which the identity has heretofore been understood. While the small building referred to was a part of the Parris house, it was an addition to that structure which was not put on until full forty years after the witchcraft delusion. The building is old, and is now used by its owner, Mr. Solomon Morrison, as a residence for one cow and several pigs.

Near to the house of Samuel Parris is a ridge of land of curious geological formation, known as "Watch House Hill." This is so called, because, in the early days of the settlement, a house was erected here from which a watch was kept in anticipation of Indian raids.

The Rebecca Nourse house is one of the oldest in town.

It is situated, some distance in the field, on the Salem road leading out from Tapleyville, and is quite near the carpet factory. It is now owned by Mr. Orrin Putnam, and remains in a good state of preservation. There is an orchard in front of it, an inclosed burial lot twenty or thirty rods to the west, and the surroundings indicate quite a thrifty farm.

At Samuel Parris's house, for a year preceding the breaking out of the delusion in full force, a circle of girls met and practised the arts of fortune-telling. Among these were Mary Waleott, Mary Warren and Ann Putnam. Mary Waleott, who was a daughter of Jonathan Waleott, lived at the time in a house on the field northeast of the common, now owned by Mr. Moses Prince.

One of the pleasant drives during the day was that which a small party took in company with Mr. Mudge and Mr. Wm. R. Putnam. It extended through the fine estate of Mr. George Peabody, which is one of the most attractive in this part of the town, over the Newburyport turnpike to the farm of Mr. Francis Dodge on Hathorne's Hill, and thence down upon the other side to Mr. Wm. R. Putnam's house, which is historically distinguished by something more creditable than witchcraft, namely, as being the birthplace of Gen. Israel Putnam, of French war and revolutionary fame.

Hathorne's Hill is put down on some of the county maps as Prospect Hill, though Dodge's Hill is perhaps as familiar a designation as any in the neighborhood. We do not know how many hills there are in Essex County, each claiming to be the highest, but this certainly is spoken of as the highest in the southeast part of the county. It commands a very wide and extensive prospect of the surrounding country, including all the neighboring towns and villages, Wachusett, and a number of the

prominent mountains in the southern part of New Hampshire. The vessels and islands of the harbor can be seen, and the venerable Mr. Samuel Preston informed us that he has counted over fifty church steeples from this summit. The farm which includes this hill was part of the old Hathorne grant, that originally came down to the brook which runs through the Peabody farm. It has been successively owned by Mr. Ray, Eben Porter, James Prince, Nathaniel Ingersoll (son of Capt. Jona.), Capt. John Andrew (who built and owned Mr. James O. Safford's present mansion near the common, in Salem), Capt. Stephen Wilkins, John Dexter (who came from Essex), and Francis Dodge, the present owner and occupant. Mr. Dodge married a daughter of Samuel Preston, and sister of Miss Harriet Preston, the authoress. Mr. Preston, who is now eighty-one years of age, was here at the farm at the time of our call, and showed us around with great apparent pleasure, cheerfulness and activity. His room in the farmhouse was very interesting, a fine old English ivy, which extended nearly all the way around the room, claiming special attention. Capt. Andrew, during his ownership, planted a grove of English oaks on this hill, which are now vigorous and thrifty. This farm has recently been offered, with some forty-two acres belonging to Mr. W. R. Putnam, making two hundred acres in all, as a site for the new State hospital for the insane. It is certainly a fine situation.

The Israel Putnam house, at the foot of the hill, is a mansion bearing every mark of comfort, inside and out. The larger portion of the house is not conspicuously old, there being not much left of the original part beyond the portion containing the two rooms which formerly constituted the one in which Gen. Israel was born. The farm descended from Thomas Putnam, to whom it was origi-

nally granted. From Thomas it came to his son Joseph, then to Lieut. David (who was a brother to Gen. Israel), then to his son Israel, then to Daniel, and finally to William R., the present occupant. Mr. Putnam and his sister were very kind in showing the old relics, and the visit was really one of much pleasure. Gen. Israel Putnam is of course remembered as a man who, even in his boyhood and youth, was characterized by a spirit of daring and intrepidity. He was born Jan. 7, 1718, and at the age of twenty-one married Hannah Pope, of Salem, and removed to Pomfret, Conn. He commanded a company during the French war, was Major General at Bunker Hill, and died May 19, 1790, aged 72.

At the roadside, close by the church, stands the old tavern, now a dwelling house, in which the genial widow Smith ministered to the wants of weary travellers, and higher up is the parsonage, which was once used for the same purpose. Every house has its history, and every history finds some willing tongue to publish its wild and thrilling narratives. At the house of the Rev. Mr. Rice, the pastor, are to be found the records of the parish during those troublous times when Bailey and Parris presided over the church, and many quaint specimens of penmanship and rhetorical beauty were noticed on their pages.

At the close of the rambles and examination of the old records, the company gathered in the basement of the church and partook of refreshments. Here tea and coffee were furnished, and the citizens showed a degree of hospitality that was quite commensurate with their courtesies and attentions during the day.

The afternoon session was held in the church at 3 p. m. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the correspondence :—

From Charles F. Crocker, Lawrence, Aug. 15; Pardee & Chamberlin, Fulton, N. Y., Aug. 31; W. F. Poole, Cincinnati, Ohio, Aug. 23; Charles B. Rice, Danvers Centre, Aug. 21; S. J. Spalding, Newburyport, Aug. 30; E. R. Sullivan, Zanesville, Ohio, Aug. 23; E. N. Walton, Salem, Aug. 26; A. Williams & Co., Boston, Aug. 15; Marshall P. Wilder, Boston, Aug. 15; U. S. Bureau of Education, Washington, Sept. 1; Buffalo Historical Society, Aug. 22.

The LIBRARIAN announced the following additions :—

By Donation.

- APPLETON, FRANCIS H., of Peabody. Miscellaneous pamphlets, 25.
 LEE, JOHN C. Commercial Bulletin, July 26, Aug. 2, 9, 16, 1873.
 MORSE, E. S. On the Systematic Position of the Brachiopoda, by donor. 8vo pamph. Boston, 1873.
 MUNSELL, JOEL, of New York, N. Y. Albany Penitentiary Laws for 1872. 1 vol. 8vo. Miscellaneous pamphlets, 16.
 PEABODY, ALFRED. San Francisco Directories for 1852-3, 1859. 2 vols. 8vo. Manual of the Corporation of San Francisco, 1853. 1 vol. 8vo.
 PERKINS, A. T., of Boston. Copley's Life and Paintings, by A. T. Perkins. 1 vol. small 4to. Boston, 1873.
 RICE, CHAS. B., of Danvers. Centennial Celebration at Conway, June 19, 1867. 8vo pamph.
 U. S. PATENT OFFICE. Official Gazette, July 22, 29, Aug. 5, 12, 1873. General Index of "The Official Gazette." 1872.

By Exchange.

- BIBLIOTHÈQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences physiques et naturelles, Mai, Juin. Nos. 185, 186. 1873.
 GEORGIA HISTORICAL SOCIETY. Collections of. Vol. iii. 1 vol. 8vo. Savannah, 1873.
 PUBLISHERS. American Naturalist. Forest and Stream. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Western Lancet.

The PRESIDENT in his opening remarks mentioned that this is the first time that the Institute has held a meeting in this spot, so full of historic incidents, some of which are of national importance, although it has convened in three other places in the town.

It possesses some attractions to the naturalist. Within a short distance in one direction is the locality where William Oakes, the noted botanist of Essex County, and

his friend, Dr. George Osgood, of Danvers, discovered the *Vaccinium vitis-idaea* (a species of cranberry), a very rare plant in this section of the state. It is said that after a fatiguing ramble at the close of a summer's day, in the year 1820, in search of botanical specimens, upon the finding of this plant Oakes raised his hands above his head and with all the enthusiasm of an ardent lover of nature exclaimed, "we have found a rare plant that will repay us for our toil." In another direction, near the intersection of the Andover and Newburyport turnpikes, is the place where is found occasionally the rare toad *Scaphiopus solitarius*. We well remember the enthusiasm which our late esteemed friend, Dr. Andrew Nichols, manifested, when conducting us to that place in June, 1843, where a small pond, usually dry in the summer months, was filled with these toads and the tadpoles in the various stages of growth. This toad never appears except under a peculiar combination of circumstances, that only occurs at intervals of several years. Other incidents might be cited of equal interest to the student of nature, but time will not permit a further digression in this direction.

The President then gave a brief review of the work of the society and its objects, which he said was to collect materials for the natural and civil history of the county, and to cultivate a taste for the study of the sciences and the arts, and to promote the general culture of the community.

Mr. F. W. PUTNAM, of Salem, was then introduced, and gave an account of the doings of the recent meeting at Portland of the American Association for the Advancement of Science, and also of the work of Prof. S. F. Baird, as U. S. Commissioner of Fisheries, located at Peak's Island in Portland Harbor the present season, in

carrying out the objects of his mission. He exhibited a sketch of the feather of the ruddy duck, its structure being very peculiar, consisting of two feathers, in fact; the first an odd or deciduous feather, which was pushed up from the flesh by the true feather, in a similar manner to the first teeth of the child, which are pushed out by the second. He said that this was a contribution to science by Dr. Elliot Coues, U. S. A., and that it would be published with a cut in the *American Naturalist*.

Mr. Putnam presented the following paper by Dr. CARPENTER :—

ON THE GENERIC AFFINITIES OF THE NEW ENGLAND CHITONS.
BY PHILIP P. CARPENTER, OF MONTREAL.

It has been common with conchologists, even of the "advanced" school, to call every mollusk with eight valves a *Chiton*, except the vermiform species, which Lamarek separated as *Chitonellus*. The consequence has been that very little is known of most Chitonidae, except the external characters; the differentiation shown in the soft parts, and even in the shelly valves, having been overlooked.

We have been fortunate, during the explorations of the United States Fish Commission, in observing four species alive; another was taken alive at Eastport last year; a sixth has been captured on the southern coast. These are all as yet known to inhabit the American Atlantic seas, from Labrador to Florida. A seventh, called *Chiton cinereus*, is said to have been taken alive by Dr. Pickering, and to be in the collection of the Philadelphia Academy of Natural Sciences; but it may prove to belong to one of the other species, or to be a ballast specimen.

The six authentic species present well-marked characters, ranging under five genera.

It may be premised that the Lamarekian genus *Chiton* was first divided by the Rev. L. Guilding, according to the external characters of the West Indian species. About the same time, the Rev. T. Lowe published the peculiarities in the insertion plates of the British species. Both papers appeared in the "Zoological Journal." Dr. Gray, however, was the first to present, in the Proc. Zool. Soc., a full description of the forms of Chitonidae, accurately arranged under genera and sections, partly according to the external, but prin-

cipally according to the internal characters. Mr. Henry Adams, in compiling the "Genera" from H. Cuming's collection, was not allowed to examine the insertion plates. He thought he saw, however, a correlation between the internal and external marks; and accordingly redescribed Gray's genera, with lists of species, according to the surface diagnosis. Gray in his "Guide" unfortunately copied from H. Adams' list without examination. Lastly Chenu, as usual, reproduced the mistakes of H. Adams, with fresh ones of his own.

Having had unusual opportunities of dissecting-out the valves of Chitons, I have felt compelled to rectify the previously published lists, and also to propose various new genera. These I communicated to Mr. Binney, while his edition of Dr. Gould's "Invertebrata" was passing through the press; but he did not think well to alter the position of every one of our species, as I feel compelled to do.

1. The *Chiton apirulatus* does not appear in H. Adams or Gray. It is a true *Chatopleura*; distinguished by the thin hairy girdle, regular valves with sharp teeth, and long series of gills. I have not seen it alive. It ranges from southern Massachusetts to Florida. The genus is for the most part tropical.

2. The *Chiton ruber* is *Leptochiton ruber* of H. Adams; and is probably *Callochiton puniceus* Couth. of the same author. It is the *Tonicia rubra* of Gray's "Guide," to which he adds as synonymes in P. Z. S., *marmorea* and *fulminata*; and it also appears in Gray's "Guide" as *Corephium? rubrum*. It has not the characters of either of these four genera, in which our two best authors have placed it. It belongs to Gray's genus *Ischnochiton* (= *Lepidopleurus* H. Ad., not Risso) section †, "mantle-scales minute, granular;" but as the gill-rows are short, instead of surrounding the foot as in the typical species, it is necessary to establish a fresh genus, *Trachydermon*. The insertion-plates are, as in *Ischnochiton* and *Chatopleura*, regularly slit and sharp all round. Mr. Emerton first observed a great peculiarity in the animal; that there is a cancellated space between the posterior gill and the caudal extremity. Prof. Verrill observed that in different specimens there were either one, two or three rows of holes on each side. The caudal lobe is generally figured as an anal tube, but in truth it is an imperforate muscle, working the posterior part of the girdle. The feces were distinctly seen to escape, sometimes on one side, sometimes on the other; as it appeared to me, from a slit on each side.

3. The *Chiton albus* is *Leptochiton albus* of H. Adams, = *sayrinatus* Couth. I twice captured a live specimen, but each time it eluded the after-search. I do not doubt that this is also a *Trachydermon*, but cannot vouch for the peculiar characters above quoted. The genus belongs, in the main, to cold and temperate seas.

4. The British *C. marginatus* is also a *Trachydermon* and not a *Lep-*

tochiton. It is the *C. cinereus* of Lovèn, Forbes and Hanley; but not of many other writers. Of the unique American shell, so called, I can say nothing.

5. The *C. marmoratus*, common at Eastport and northwards to Greenland, is *Tonicia* of H. Adams and Gray, simply because the girdle is smooth. The true southern *Toniciae*, however, have pectinated insertion-plates and ambient gills, like the typical Chitons; while the northern species, so called, have sharp plates and short gills. They differ in fact from *Trachydermon* simply in the girdle being destitute of the minute scales. I distinguish the group as *Tonicella*.

6. The *C. mendicarius* does not appear in the lists, and is probably unknown in Europe. Fortunately a very few specimens were dredged by the "Bluelight," one of them smashed, but very large. It is known outside by the minute bristles on the girdle; but within it presents the very abnormal characters which had before been observed only in the minute British *C. Hanleyi*. This appeared as *Leptochiton Hanleyi* in Gray's first paper, but as *Acanthopleura Hanleyi* in his "Guide," p. 183. But in the same book, p. 186, the same species reappears as *Hanleya debilis*; the genus (constituted for that species alone) being said to have lateral tufts of spines; insertion plates entire, of terminal valves alike. H. Adams, following this diagnosis externally, described other species which really had these spine-tufts, though not the internal characters. However, on examining every specimen of the species in the market, I could not discern a single spine-tuft, though announced by the accurate Lovèn. I found, however, excellent internal characters. All the valves were destitute of insertion plates, except the anterior one, which really was entire, having one continuous plate, not slit. I did not know whether to believe my own eyes, or the testimony of Lovèn and Gray, till Prof. Verrill allowed me to open the large smashed specimen of *C. mendicarius*. It proved to be a true *Hanleya*, according to my diagnosis, but not according to Lovèn and Gray. I presume that the contraction of the skin, in so minute a shell, led to the appearance of tufts, and that Dr. Gray supposed that the posterior valve had an entire plate like the anterior. I should be glad of the opinion of others, whether the genus *Hanleya* should follow the type against the diagnosis, as here given; or an unreal diagnosis against the type, as followed (in part only) by H. Adams. The animal of this species resembles *Leptochiton* in having short posterior gills, and a central anal tube from which the faeces were seen to exude.

7. A similar confusion attends the last and most remarkable species, *C. Emersonii*. Several live specimens were dredged by the Bluelight, one of extraordinary size; and still more have been dredged by Pl. Dawson at Murray Bay. For the original species, *C. vestitus*, from

Alaska, a genus *Amicula* was constituted by Gray, characterized by covered valves and regular pore-tufts. The elder Sowerby figured the *Emersonii* as *vestitus* in his Conch. Illustr. Hence Dr. Gould naturally looked for the pore-tufts, and found them. Having received a fresh specimen from Dr. Stimpson, I could not find them. I wrote to Dr. Gould, who sent me his type specimens with sketch of regular pore-tufts, as he saw them; but still I could not. He died without clearing the difficulty; and I presumed there might be two species, one with and one without pores. But after examining both northern and southern suites of specimens, I feel confidence in stating that there are no true pores; but simply a profusion of hair bunches, generally very irregular, but sometimes, in early stages, more conspicuous at the sutures. I propose, therefore, to keep the name *Amicula* for the Alaskan pore-bearing species; and to name this (with the Alaskan *Pallasii*), *Stimpsoniella*, in honor of one of the best naturalists born in New England. In this genus, as in *Trachydermon*, the faeces are expelled through slits close to the caudal lobe, one on each side. When at rest, the creature makes a posterior fold in the girdle, corresponding to the wave in the posterior valve.

I should be extremely indebted to any gentlemen who would lend me unusual Chitons for examination, previously to the publication of my "Contributions towards a Monograph of the Chitonidae" by the Smithsonian Institution. There is also a great field open for investigation to all those who can examine living chitons, or even dissect alcoholic specimens. It is known that the external characters are not coördinate with the internal ones; it remains to be found out whether either of them correlate with the anatomical characters of dentition, gills, vent, etc., which ought to furnish the best divisions in arranging this difficult group.

The Secretary, Mr. JOHN ROBINSON, gave an interesting account of the botanical work in the morning. His remarks were chiefly confined to a description of the ferns found during the excursion, as follows:—

Among the rarer ferns in this region is *Phegopteris polypodioides*, a fine specimen of which was collected by Miss Page this morning. This and its associate, *P. dryopteris*, are only to be found in a few localities in this county, while north and south they are very abundant, particularly near mountain streams. Of the other New England ferns that are rare, or not as yet found here, may be enumerated *Struthiopteris Germanica*, *Ophio-*

glossum vulgatum, *Adiantum pedatum* (maiden hair), *Asplenium thelypteroides*, *Phegopteris hexagonoptera*, *Aspidium aculeatum*, *A. Goldianum*, *Cystopteris bulbifera*, *Lygodium palmatum* (climbing fern), and some species of *Botrychium*. To these may be added as impossible to find, the mountain species, *Aspidium fragrans*, *Woodsia glabella* and the limestone ferns. I know only one locality in this county for the *Ophioglossum*, or the climbing fern; the maiden hair is abundant in one town and can be found sparingly throughout the county. It is very doubtful if *Asplenium thelypteroides*, *Cystopteris bulbifera* or *Aspidium aculeatum*, can naturally grow here, but it is to be hoped that *Aspidium Goldianum*, *Phegopteris hexagonoptera* and the *Struthiopteris*, as well as some of the rarer species of *Botrychium*, may yet be found in some of the beautiful nooks of which our county has so many. For three seasons past I have searched faithfully in this vicinity for the native ferns, and have been rewarded each season by the finding of species not known, or at least not noted by any collector, as indigenous to this county. Nearly all our ferns can be cultivated with success in the garden if a shady portion can be devoted to this purpose. They throw out their beautiful fronds and often hide some unsightly fence, or fill the crevices between stones, with their delicate green foliage.

Rev. E. C. BOLLES, of Salem, in giving his account of the findings during the forenoon, spoke particularly of the minute fungi, which feed upon plants as certain insects feed upon other insects. He illustrated his remarks upon the blackboard, and in closing alluded to the importance of the study of these minute forms, especially to agriculturists, as many of the crops are affected more or less by these parasitic plants.

BULLETIN

OF THE
ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., OCT., 1873. NO. 10.

One Dollar a Year in Advance. 10 Cents a Single Copy.

FIELD MEETING AT DANVERS CENTRE, FRIDAY,
SEPT. 5, 1873.

[*Continued.*]

The PRESIDENT presented the following paper, found among the archives of the Institute :—

"Our Breath'n & Neibours at y^e flarmes Request."
To the respective Towne of Salem.

Wee whose names are vnder writen desire to informe you of our condition by reason or Habytations are distant from our publike Meeting house at least four miles vpon the rode the neerist, the farthist about 8 or 9; if one or two of a great family goeth to meeting, the rest being Children and Servants tarry at home And wee feare spend the day vnpoffittably if not pfainly, and in consideration herof wee all judge the afflicted state of y^e body ought to bee relieved how much more the condition of Soules. Wee feare if not releaved that our Children will bee as the Hethen whome God drove out before vs. Therefore or humble request is that you will be pleased

to take into yor Christian consideration our condition either to pvide for vs a Minister and so maintaine him in Common that so we may injoy the word of God amongst vs, or be pleased to dismisse to vs such anumber of ffamilies as liueth remote from y^e Towne so as that wee may bee able to maintaine a Minister amongst our Selves, & if the Towne be pleased to leave vs distinet to orselves then our desire is to begin at y^e Horse bridge to Serg^t Leaches, Jacob Barney, Sarg^t Porter, Mr. Endecot to the wooden bridge swamp & the inhabitanee beyond y^e River & so we desire to waite vpon God for helpe & his assistance and vpon you for yor loveing answer.

The 4 : 12, §§	Rob't Prince, Jonat, Knight, James Hadlock, Joseph Houlton.	Rich. Hutchison, Thomas Putnam, Bray Wilkins, Nath'l Putnam, Jno. Putnam, Thomas Fuller, Josh. Rea, Joseph Hutchison, Nath'l Ingerson, Jno. Wilkins, Henry Keny.
	Joseph Herick, Tho. Small, Jno. Burton, Jno. Gingel, Tho. Wilkins, Philip Knight, Jno. Simson,	

Rev. CHARLES B. RICE, the pastor of the church, spoke words of welcome and expressed his gratification that the meeting was held in his church, and alluded to some of the old historical houses, of which not a vestige now remains.

Mr. DAVID STILES, of Middleton, being called upon, spoke of the old Townsend Bishop house, and exhibited pieces of the wood of the house which he had recently taken from the ridgepole and narrated some interesting reminiscences. He alluded in the highest terms of commendation to the services rendered to this community by Mr. William P. Upham, in making us better acquainted

with the many interesting incidents connected with our early history, whilst collecting materials for his father's admirable work on the Salem Witchcraft.

Dr. JEREMIAH SPOFFORD, of Groveland, spoke of the geological evidence that the Merrimac River once emptied into the ocean by another channel south of its present one.

Dr. Spofford then alluded to the remarks of Mr. Putnam on the restocking of rivers, especially the Merrimac, with fish, and questioned the success of the plan.

A discussion followed, participated in by Messrs. J. Spofford, F. W. Putnam, C. P. Preston, and others; during which Mr. Putnam made a statement as to the results already attained by the several Fish Commissioners, and urged that they be aided in their work, as the principles, upon which the experiments were being made, were sound, and if the people would have patience and assist the Commissioners in their efforts, he believed the day would not be far distant when salmon and shad would again be plenty in our rivers.

Mr. AUGUSTUS MUDGE, of Danvers Centre, spoke of the important work done by the Institute at their meetings, and was gratified to have a meeting in his town. He alluded in highly complimentary terms to Mr. Upham's valuable history of the Salem witchcraft, which he said was of inestimable worth to students of history; but the great mass of the people could not devote their time to its study. He said that there was a little book called "Witch Hill," which was admirably adapted to popular reading. He spoke of the local history of the place, and said that the first and last English governors of Massachusetts resided in Danvers — Gov. Endicott and Gov. Gage, the one at his farm near Danversport, the other at

the Collins House, now owned and occupied by Francis Peabody, Esq. The house where Gen. Israel Putnam was born still stands about one mile away, and a number of the ancient witch houses are still in existence in various parts of the town.

MR. WILLIAM P. UPHAM, of Salem, related some facts about the original Parris house, the birthplace of witchcraft. Some distance from the site of the house stands another house, a part of which was supposed to be a part of the original Parris house; but which proves to be an addition built in the eighteenth century and which was moved away. He exhibited, however, a well authenticated fragment of the old house which came from a shed built of the pieces of the house when it was torn down. He also exhibited some pears gathered from a tree planted by the Rev. Mr. Bailey, the first minister of the parish.

MR. GEORGE TAPLEY, of Danvers, spoke of the Hon. Samuel Holton,* a very noted, prominent and influential citizen in the annals of the town, and paid a fitting tribute to his memory. The mansion in which he resided for many years is still extant and is near to this place of meeting. Mr. Holton was a man of great integrity and

*Samuel Holton, the only son of Samuel and Hannah (Gardner) Holton, was born at Salem Village, now Danvers, June 9, 1758. In early life a successful practitioner of medicine. His public career commenced in 1768, when he was elected a representative to the general court from Danvers. He was eight years a representative, five years a senator, and twelve councillor, in Massachusetts legislature, five in congress under the confederacy and two under the Federal constitution, a member of the constitutional convention of 1780; a delegate to the State convention for ratifying and adopting the Federal constitution, twice served as presidential elector. For thirty-two years a justice of the court of common pleas for Essex, being for half of that time the presiding justice, a judge of probate of Essex from July 2, 1796, to May 29, 1815. He also discharged the duties of several town offices and other public and private trusts. He died Jan. 2, 1816, and tributes were paid to his memory by numerous grateful hearts and a sermon was preached at his funeral by the Rev. Dr. Benj. Wadsworth, which was published and widely circulated.

ability; courteous and unaffected, enthusiastic in promoting the cause of liberty, yet dignified, firm and prudent in all his actions. His long and faithful services in various important stations, legislative as well as judicial, have caused his name to be cherished with gratitude and respect.

Mr. S. B. BUTTRICK, of Salem, presented the following list of plants observed by him during the excursion in the forenoon :—

<i>Gerardia purpurea</i>,	.....	Purple gerardia.
“ <i>tenuifolia</i>,	.....	Slender gerardia.
<i>Eupatorium purpureum</i>,	....	Trumpet weed.
“ <i>perfoliatum</i>,	....	Thoroughwort.
<i>Spiraea salicifolia</i>,	.....	Meadow sweet.
“ <i>tomentosa</i>,	.....	Hardhack.
<i>Arum triphyllum</i>,	.....	Indian turnip (in fruit).
<i>Nabalus albus</i>,	.....	White flowering lettuce.
<i>Mulgedium leucophaeum</i>,	....	Blue lettuce.
<i>Onoclea sensibilis</i>,	.....	Sensitive fern.
<i>Cuscuta Gronovii</i>,	.....	Dodder.
<i>Rudbeckia laciniata</i>,	.....	Tall cone flower.
<i>Apocynum androsaemifolium</i> ,	Dogsbane.	
<i>Typha latifolia</i>,	.....	Reed mace (in fruit).
<i>Trichostema dichotomum</i>,	....	Blue curls; pennyroyal.
<i>Lespedeza capitata</i>,	.....	Headed bush clover.
<i>Oxalis stricta</i>,	.....	Yellow wood sorrel.
<i>Cichorium intybus</i>,	.....	Succory.
<i>Lobelia inflata</i>,	.....	Indian tobacco.
“ <i>cardinalis</i>,	.....	Cardinal flower.
<i>Brunella vulgaris</i>,	.....	Common selfheal.
<i>Eriophorum polystachyon</i> ,		
var. <i>angustifolium</i>,	....	Cotton grass.
var. <i>latifolium</i>,	....	“ “
<i>Goodyera repens</i>,	.....	Rattlesnake plantain.

Mr. F. W. PUTNAM, after some appropriate remarks, introduced the following resolution, which was unanimously adopted :—

Resolved, That the thanks of the Essex Institute be presented to the proprietors of the First Congregational Church and to the citizens of Danvers generally for their generous and kind attentions, which have contributed so much to the pleasure and interest of the day.

Messrs. J. Fletcher, of Lawrence, and J. Henry Badger and Edgar Vivian, of Salem, were elected resident members.

Adjourned.



SPECIAL MEETING, THURSDAY, SEPT. 11, 1873,

Was held this evening, commencing at 7:15 o'clock, in the Whitefield church, Newburyport, for the reading of a memorial address by Rev. SAMUEL J. SPALDING, D.D., upon the late HENRY COIT PERKINS, M.D., of Newburyport, an interested and esteemed member of the Institute.

The following exercises were observed on this occasion :

1. Hymn.—“The spacious firmament on high.”
2. Reading of Scripture and Prayer, by Rev. R. Campbell.
3. Singing.—“Blessed are the dead who die in the Lord.”
4. Address by Rev. S. J. Spalding, D.D.
5. Singing.—“God who madest earth and heaven.”
6. Benediction.

The singing was by a quartette under the direction of Mr. Wm. P. Dodge.

The thanks of the Institute are due to Rev. Dr. Spalding for his faithful and correct delineation of the character and services of our late associate. The request for a copy of the address for publication has been freely granted, and the same will accordingly be printed in the twelfth volume of the “Historical Collections.”

REGULAR MEETING, MONDAY, OCT. 6, 1873.

MEETING this day at 4 p.m. The PRESIDENT in the chair.

John G. Barker, of Lynn, was elected a resident member.



REGULAR MEETING, MONDAY, OCT. 20, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence :—

From E. C. Bolles, Sept. 12, 15; E. P. Boow, New York, Oct. 6; Henry L. Bowditch, Boston, Sept., Oct. 10, 18; E. C. Cowles, Ipswich, Sept. 29; J. E. Deane, New York, Oct. 17; William J. Fletcher, Lawrence, Sept. 8; John C. Holmes, Detroit, Mich., Oct. 6; F. B. Hough, Lowville, N. Y., Sept. 13; S. G. Howe, Boston, Sept. 27; T. Morong, Ipswich, Sept. 20, Oct. 4, 8; J. R. Nichols, Haverhill, Sept. 28; A. Osgood, Newburyport, Sept. 8; G. D. Phippen, Sept. 12; S. C. Rodgers, Troy, N. Y., Sept. 30; J. L. Robinson, Wenham, Oct. 7; Edward E. Rice, Boston, Sept. 30; Rogers Stuart, Providence, R. I., Oct. 14; George Russell, Boston, Sept. 27; John J. Somes, Gloucester, Sept. 9, 12, Oct. 6, 14; S. J. Spalding, Newburyport, Sept. 13, 20, Oct. 10; J. M. Thompson, Sept. 5, 9; Henry E. Waite, West Newton, Sept. 20; Charles A. Walker, Chelsea, Sept. 26, Oct. 8; W. C. Wood, Wenham, Oct. 18; W. H. Yeomans, Columbia, Conn., Sept. 22; American Geographical Society, Oct. 11; Berlin, Akklimatisations Verein, June 26; Buffalo Historical Society, Oct. 7; Essex Horticultural and Agricultural Society, Oct. 1; Liege, Société Royale des Sciences, July; Liverpool, Royal Institution, Aug. 21; New York Historical Society, Oct. 10; New York Genealogical and Biographical Society, Oct. 2; New York Lyceum of Natural History, Oct. 6; New York State Library, Oct. 2; Paris, Société Anthropologique, Juin 12; Vermont State Library, Oct. 1.

The LIBRARIAN reported the following additions :—

By Donation.

BARLOW, JOHN. Acts and Resolves of Mass. Leg., for 1869. 1 vol. 8vo. Annual Report of the Adjutant General of Mass. for 1862. 1 vol. 8vo. Seventh Annual Report of the Board of State Charities of Mass. for 1869-70. 1 vol. 8vo.

BEMIS, LUKE, of West Chester, Penn. History of Delaware County, Penn., by Geo. Smith, M. D. 1 vol. 8vo. Phila., 1862. History and Directory of Norristown and Bridgeport, 1860-61. 1 vol. 12mo.

GREEN, SAM'L A., of Boston, Mass. Miscellaneous pamphlets, 16.

- HAYDEN, F. V., of Washington, D. C. Acrididae of North America, by Cyrus Thomas, Ph. D. 4to pamph.
- LEE, JOHN C. Commercial Bulletin for Sept. 13, 20, 1873.
- MERRITT, L. F. Shanghai Budget and Weekly Courier for July 12, 19, 26, Aug. 2, 9, 1873.
- NATIONAL ASSOCIATION OF WOOL MANUFACTURERS. Bulletin July-Sept., 1873.
- NORTON, M. E. B., of Rockford, Ill. Catalogue of the Officers and Students of Rockford Seminary for 1864, 1865-6, 1867-8, 1868-9, 1869-70, 1872-3. 6 pamphlets.
- PACKARD, A. S., of Brunswick, Maine. Miscellaneous college pamphlets, 4.
- PALFRAY, C. W. Miscellaneous pamphlets, 20.
- STAPLES, C. E., of Worcester, Mass. Programme of the Sixteenth Annual Festival of the Worcester County Musical Association, Oct. 6, 7, 8, 9, 10, 1873.
- STEPHENS, W. H., of Lowville, N. Y. Autobiography of L. Norton. 1 vol. 12mo.
- STONE, E. M., of Providence, R. I. Annual Report of the School Committee of the City of Providence, July, 1873. 8vo pamph.
- SUMNER, CHARLES, U. S. Senate. Medical and Surgical History of the War of the Rebellion. 2 vols. 4to.
- UPHAM, ROGER F. Annual Report of the Young Men's Christian Association of Worcester, 1873.
- U. S. BUREAU OF EDUCATION. Report of the Commissioners of Education, 1872. 1 vol. 8vo. Circulars of Information of the Bureau, Nos. 1, 2, 3, 1873.
- U. S. DEPARTMENT OF THE INTERIOR. Meteorological Observations during the year 1872 in Utah, Idaho and Montana, by H. Gannett.
- U. S. PATENT OFFICE. Official Gazette for Aug. 19, 26, Sept. 2, 9, 16, 23, 1873.

By Exchange.

- AKKLIMATISATIONS VEREIN IN BERLIN. Zeitschrift, Vol. ix, Nos. 7-12, 1871. Vol. x, Nos. 1-12, 1872.
- AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the, at the Semi-Annual Meeting, held in Boston, Apr. 30, 1873.
- BERWICKSHIRE NATURALIST CLUB. Proceedings of, 1872.
- BOSTON PUBLIC LIBRARY. Twenty-First Annual Report, 1873.
- CROSSE ET FISCHER. Journ. Conchyliologie, Tome xiii. 3e Série. Nos. 2, 3, 1873.
- GEINITZ, HANNS BRUNO. Königliche Mineralogische Museum zu Dresden. 1873.
- INSTITUT HISTORIQUE IN PARIS. L'Investigateur, Jan., Feb., March, April, 1873. 2 pamphlets. 8vo.
- KONGELIGE DANSKE VIDENSKABERNES SELSKAB IN KJØBENHAVN. Oversigt, 1872. No. ii.
- L'ACADEMIE IMPÉRIALE DES SCIENCES, IN ST. Petersburg. Mémoires, Tome xviii, Nos. 8, 9, 10, 1872. Tome xix, Nos. 1, 2, 1872. 5 pamphlets. Bulletin, Tome xvii, Nos. 1, 5, 1872. Tome xviii, Nos. 1-2, 1872. 3 pamphlets.
- NATURHISTORISCHE GESELLSCHAFT ZU HANNOVER. Zweiundzwanzigster Jahresbericht, 1871, 1872.
- NATURWISSENSCHAFTLICHEN GESELLSCHAFT "ISIS" IN DRESDEN. Sitzungs-Berichte. Oct., Nov., Dec., 1872. Jan., Feb., März, 1873.
- NATURWISSENSCHAFTLICHEN VRKIN IN HAMBURG. Uebersicht der Aemter-Verteilung und Wissenschaftlichen Thüttigkeit, 1871. Abhandlungen aus dem Gebiete der Naturwissenschaften. V Bd. 3 Abth. mit 8 Tafeln, 1872.

Rufus B. Gifford, of Salem, Mrs. Mary Safford Blake, of Boston, Charles A. Torrey, of Swampscott, and Frank O. Poor of Peabody, were duly elected resident members.

BULLETIN

OF THE
ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., Nov., 1873. No. 11.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, Nov. 3, 1873.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Frances A. A. Appleton, Reading, Sept. 26, 1873; S. L. Boardman, Augusta, Me., Oct. 22; E. P. Bowditch, New York, Nov. 1; C. J. Maynard, Ipswich, Oct. 29; Thomas Morong, Ipswich, Oct. 27; William Northery, Oct. 29; J. H. Putnam, Danvers, Oct. 27; William S. Vaux, Philadelphia, Oct. 31; John A. Vinton, Winchester, Oct. 23, 30; Charles A. Walker, Chelsea, Nov. 1; William C. Wood, Wrentham, Oct. 18; H. T. Williams, New York, Oct. 23; Vermont State Library, Oct. 30; U. S. Naval Observatory, Washington, Oct. 25; Bruxelles, Académie Royale, Mai 10; Calcutta, Geological Survey of India, Sept. 3, 1872; Lyon, Société d' Agriculture, Histoire Naturelle et Arts Utiles, Juillet; Historical and Philosophical Society of Ohio, Oct. 23.

THE LIBRARIAN reported the following additions :—

By Donation.

ANDREWS, Miss ELIZA. North British Review, 1856. 14 nos.

BOLLES, E. C. Boston. As it was and is. 1 vol. 8vo. 1872.

BOWDITCH, HENRY L. of Boston. Nation, 1865, 1866, 1867, 1868. 7 vols 4to, and 226 numbers of subsequent years. Army and Navy Journal for 1863-4, 1864-5, 1865-6. 3 vols. 4to.

CROSBY, A. Triennial Catalogue of Dartmouth College, 1873. 8vo pamph.

LEE, JOHN C. Commercial Bulletin for Sept. 27, Oct. 4, 11, 18, 1873.

LINCOLN, SOLOMON, Hingham. The Old Meeting House in Hingham, 1681-1873. 8vo pamph.

NICHOLS, JOHN H., of New York, N. Y. Miscellaneous pamphlets, 50.

PUTNAM, GEO. G. Salem Directory for 1864. 1 vol. 16mo. The Rural Cemeteries of America, pts. 3, 4. 2 pamphlets, 4to. 1846.

RAYMOND, JOHN H., of Poughkeepsie, N. Y. Catalogues of Vassar College for 1865-6, 1866-7, 1867-8, 1869-70, 1871-2, 1872-3. Communications to the Board of Trustees of Vassar College, by its Founder. 8vo pamph. Biographical Sketch of Matthew Vassar, by J. H. RAYMOND. 8vo pamph. A Sketch of Vassar College, by J. H. Raymond. May, 1873. 8vo pamph.

SAUNDERS, MARY. History of the town of Warwick, Mass., by Hon. Jona. Blake. 1 vol. 8vo. 1873.

WEBB, S. P. Wood's Institute. 1 vol. 4to. London, 1763. Elementary Treatise on Mechanics. 1 vol. Cambridge, 1825. Wealth of Nations. 2 vols. 8vo. Hartford, 1811. Patent Office Report for 1818. 1 vol. 8vo. Stewart on the Mind. 1 vol. 8vo. Boston, 1821. The Federalist. 1 vol. 8vo. Washington, 1818. Laws of Mass. Vol. ii. iii. 2 vols. Boston, 1823. Holy Bible. 3 vols. 8vo. Phila., 1804. Sermons by Rev. J. S. Buckminster. 1 vol. 8vo. Boston, 1814. Memoir of Nath'l A. Haven. 1 vol. 8vo. 1827. Element of Physics. 1 vol. 8vo. Phila., 1829. Adverse Enjoyment. 1 vol. 8vo. Boston, 1827. Lectures on Rhetoric and Belles Lettres. 1 vol. 8vo. N. Y., 1826. Memoirs of Gen. Lafayette. 1 vol. 8vo. Boston, 1824. The Power of Solitude. 1 vol. 8vo. Bards of the Bible. 1 vol. 8vo. New York, 1851. Discourses by F. Wayland. 1 vol. 8vo. Boston, 1833. Poems by G. Mellen. 1 vol. 8vo. Boston, 1833. Philosophy of Religion. 1 vol. 8vo. Phila., 1849. Sullivan's Lectures. 2 vols. 8vo. Portland, 1805. The Scriptures on the Guilt of Slavery. 1 vol. 8vo. Boston, 1860. Elements of Technology. 1 vol. 8vo. Boston, 1829. Essays on Phrenology. 1 vol. 8vo. Phila., 1822. Universal History. Vols. i. ii. iv. 3 vols. 12mo. Collections of the Mass. Historical Society for 1799. 1 vol. 8vo. Boston, 1800. The Throne of David. 1 vol. 8vo. Phila., 1870. Memoirs of the Revolution. 1 vol. 8vo. Phila., 1839. Spurzheim on Education. 1 vol. 8vo. Boston, 1832. Jefferson's Manual. 1 vol. 12mo. History of Nova Scotia, etc. 1 vol. 12mo. 1837. Washington's Letters. 2 vols. New York, 1796. Unitarian Tracts. 3 vols. 12mo. Legend of St. George. 16mo. 1836. The Works of Alexander Pope. 1 vol. 16mo. London, 1736. Notes on the State of Virginia. 1 vol. 16mo. Boston, 1802. Hymns and Psalms. 1 vol. 16mo. Boston, 1828. The Life and Death of the Rev. A. Fuller. 1 vol. 12mo. 1818. Channing on Slavery. 1 vol. 12mo. Miscellaneous Works of Oliver Goldsmith. 1 vol. 16mo. Phila., 1827.

By Exchange.

ACADEMIE IMPÉRIALE DES SCIENCES, BELLES-LETTRES ET ARTS IN LYON. Mémoires, tome xix. 1871-72.

ACADEMIE ROYALE DES SCIENCES, DES LETTRES ET DES BEAUX-ARTS DE BELGIQUE IN BRUXELLES. Annuaire, 1872, 1873. Bulletins, 2me série, 10me année, tomes xxxii, xxxiii, xxxiv, 1871-2. Centième Anniversaire de Fondation (1772-1872). Tome i. ii. 2 vols. 8vo. Observations des Phénomènes Periodiques pendant l'année, 1870. 4to pamph.

GEOLOGICAL SURVEY OF INDIA. Memoirs of the Geological Survey. Vol. viii, pts. i, ii. 2 pamphlets. Vol. ix, pts. i, ii. 2 pamphlets, 1872. Records of the Geological Survey. Vol. v, pts. i, ii, iii, iv. 4 pamphlets. Memoirs of the Geological Survey. Vol. iv, pts. i, ii. 1872. 2 pamphlets.

L'ACADEMIE IMPÉRIALE DES SCIENCES DE ST. PETERSBURG. Mémoires, tome xix, Nos. 3, 4, 5, 6, 7. 1873. 5 pamphlets.

NATURAL HISTORY SOCIETY OF MONTREAL. Canadian Naturalist. Vol. vii. Nos. 2, 3.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Historical and Genealogical Register and Antiquarian Journal for Oct., 1873.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record for Oct., 1873.

NEW YORK LYCEUM OF NATURAL HISTORY. Proceedings of the, 2d Series, Jan. 3d, March 3d, 1873. 8vo pamph. Annals of, March-June, 1873.

NEW YORK STATE LIBRARY. Twenty-fourth Annual Report of the New York State Museum of Natural History, 1870. 1 vol. 8vo. Reports of the Regents of the University of N. Y. for 1870, 1871, 1872. 3 vols. 8vo. Reports of the Trustees of the N. Y. State Library for 1872-1873.

OBERHESSIENSCHE GESELLSCHAFT FÜR NATUR UND HEILKÜNDE IN GIessen. Vierzehnter Bericht, tome xiv, 1873.

PEABODY ACADEMY OF SCIENCE. Fifth Annual Report of the Trustees of the, for 1872.

REALE ACCADEMIA DELLE SCIENZE IN BOLOGNA. Rendiconto, Anno Accademico, 1871-72.

SOCIÉTÉ D'ACCLIMATION IN PARIS. Bulletin Mensuel, tome x, Nos. 1-5. 1873, 5 pamphlets. 8vo.

SOCIÉTÉ D'AGRICULTURE D'HISTOIRE NATURELLE ET DES ARTS UTILES, Lyon. Annales, tome iii. 1870.

SOCIÉTÉ D'ANTHROPOLOGIE IN PARIS. Bulletins, tome vii, No. 1; tome viii, No. 1. 1872-3. 2 pamphlets. 8vo.

SOCIÉTÉ LINNÉENNE IN LYON. Annales, tome xix, 1872.

SOCIÉTÉ ROYALE DES SCIENCES DE LIÈGE. Mémoires 2e Série, Tome iii, 1873.

VERMONT HISTORICAL SOCIETY. Vermont House Journal, 1872. 1 vol. 8vo. Senate Journal, 1872. 1 vol. 8vo. Vermont Legislative Documents, 1872. 3 vols. 8vo. The Capture of Ticonderoga. 1 vol. 8vo. Report of the Transactions of the Vermont Dairymen's Association for 1872. 8vo pamph. Report of the Vermont Insane Hospital for 1873. 8vo pamph.

PUBLISHERS. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Sailors' Magazine and Seamen's Friend. Salem City Post. The Penn Monthly.

The following donations were announced to the Museum:—

GEORGE G. CREAMER. A sea-letter with the signatures of Geo. Washington and Edw. Randolph.

GEORGE D. PHIPPEN. A Memorial Pitcher.

Mrs. P. P. PINEL. A Miniature of Capt. Eben Shillaber.

Mrs. EDWARD APPLETON of Reading. A piece of the first Patch or India Copper Plate, as it was called, that was imported into Boston by Hon. Thaddeus Mason, of Cambridge (b. Jan. 7, 1707, and d. May 1, 1802), probably more than 120 years old.

Mr. C. J. MAYNARD, of Ipswich, gave an interesting sketch of the mechanism of the flight of birds, which he illustrated by a series of preparations of the breast bones, and by drawings on the blackboard. He also alluded to the means by which animals belonging to other classes are enabled to fly with a greater or less degree of perfection; such as the bats, flying fishes, flying reptiles, etc.

A discussion on some points of structure followed, participated in by Messrs. F. W. Putnam, A. S. Packard, Jr., and others.

Mr. F. W. PUTNAM read the following communication:

NOTES ON THE BIRD-FAUNA OF THE SALT LAKE VALLEY AND
THE ADJACENT PORTIONS OF THE WAHSATCH MOUNTAINS.

BY ROBERT RIDGWAY.

THE recently published paper of Mr. J. A. Allen* upon the birds collected and observed by him in the vicinity of Ogden, in the Salt Lake Valley, has called the attention of ornithologists to that field; and has, moreover, particularly attracted those interested in the subject of the geographical distribution of North American birds.

While Mr. Allen's observations were made during the season of the autumnal migration, I had the good fortune to explore nearly the same ground during the breeding season,† or when the summer fauna was stationary. Combining, therefore, the results of the two explorations, and taking into additional consideration that we collected in localities a few miles apart—Mr. Allen at Ogden and I at and about Salt Lake City—the character of the avi-fauna of the western watershed of the Wahsatch may be pretty well shown.

* See Bulletin of the Museum of Comparative Zoology, Cambridge, Mass., Vol. iii, No. 6, July, 1872. Part viii, List of the Birds collected in the vicinity of Ogden, Utah Territory, from Sept. 1 to Oct. 8, 1871; with Annotations. pp. 161-173. (Species 137.)

† It is fitting to state here that my investigations were made under the auspices of the government, I being attached to the U. S. Geological Survey of the 40th parallel, as zoologist. Mr. Clarence King, U. S. Geologist in charge of the Survey, throughout the continuance of the work, offered me every possible facility. The general report upon the birds collected and observed by Mr. King's Survey is now in press and nearly completed, and will ere long be before the public.

The season of my investigations extended from the 20th of May until the middle of August, 1869. The area which they covered comprised the immediate vicinity of Salt Lake City, where most of the month of May was passed, and where a few birds were collected by me the previous October. In the early part of June a trip was taken to the large islands, Antelope, Stansbury and Carrington, in the Great Salt Lake. On the 23d of the latter month our camp was removed to Parley's Park, an elevated meadow in the Wahsatch mountains, about twenty-five miles east of Salt Lake City. In Parley's Park a rich bird-fauna was found, and I had the good fortune to be there in the height of the breeding season. About the beginning of July, an excursion was made to the western spur of the Uintah Mountains, crossing Kamas Prairie on the way. Returning along the Provo River, passing by Utah Lake, and thence northward along the western base of the Wahsatch, to Salt Lake City, the field of my observations was still farther extended.

Throughout this considerable area of country no marked local variations in the bird-fauna were noticed, beyond occasionally the occurrence at a certain point of a species not noticed elsewhere. Thus, on Antelope Island, the true *Empidonax Traillii* was obtained. In Kamas Prairie, *Aetusurus Bartramius* was noticed, while along the Provo River, *Turdus fuscescens* was very abundant. In Parley's Park, a single individual of *Calamospiza bicolor* was seen and obtained, and at Salt Lake City the *Melanerpes erythrocephalus* was seen. Of course the necessary diversity of woodland, desert and aquatic faunæ was everywhere observed in their respective haunts, but the same kind of locality was inhabited by the same characteristic set of birds, wherever we went.

The western water-shed of the Wahsatch Mountains is a region remarkable as forming a natural, and nearly abrupt, limit to the westward range of the bulk of the species characterizing the eastern region of North America, though the western fauna overlaps for a distance of nearly one thousand miles to the eastward. In the *Ornis* of the Salt Lake Valley there is thus a combination of these two opposite faunæ, which gives to it an interesting variety and peculiar richness, compared with other western localities. This mixture of eastern and western birds at first rather surprises the collector in this section, for it is so far within the area of the western region that the former are supposed to be all left behind. Taking the vicinity of Salt Lake City, the collector will find, in the lower portions of the cañons of the Wahsatch, the Cat-bird (*Galeoscoptes Carolinensis*), skulking through the same thickets with the Woodhouse's Jay (*Cyanocitta Florilana*, var. *Woodhousei*), while the Olive-backed Thrush (*Turdus Scainsonii*) joins in song with the Solitaire (*Myadestes Town-*

sendii). In the willow copses along the streams of the valley portions, the Tawny Thrush (*Turdus fuscuscens*) sings in company with the Western Tanager (*Pyranga ludoviciana*) and Black-headed Grosbeak (*Hedymeles melanopephalus*); the Redstart (*Setophaga ruticilla*) and Fairy Titmouse (*Psaltriparus plumbeus*) may often be seen flitting through the same thickets; in the meadows, Bobolinks (*Dolichonyx oryzivorus*) and Yellow-headed Blackbirds (*Xanthocephalus interceps*) mingle together; in the same cottonwood trees may be found nests of the Eastern and Western Kingbirds (*Tyrannus Carolinensis* and *T. verticalis*), while around them sport together the eastern Red-headed Woodpecker (*Melanerpes erythrocephalus*) and its ring-necked cousin (*M. torquatus*). Besides those above mentioned, are many other eastern species whose ranges find their western limit in this neighborhood. Mr. Allen gives the following as found at Ogden:—*Dendroica Blackburniae* (Sept.): *Vireosylvia olivacea* (Sept.). Other eastern species, given in Mr. Allen's list, I have obtained at various points in Nevada, as follows:—*Helminthophaga ruficapilla* (East Humboldt Mts., Sept.; also California, Xantus and Gruber); *Laniocera solitaria* (West and East Humboldt Mts., Sept. and Oct.); *Ampelis cedrorum* (Humboldt Valley, Sept.); *Dolichonyx oryzivorus* (Ruby Valley, August); *Tyrannus Carolinensis* (Truckee River, July and August); also *Spizella monticola* (western Nevada; winter resident) and *Ectopistes migratorius* (West Humboldt Mts., Sept.), not given in Mr. Allen's list. Besides the foregoing species, Mr. C. Drexler obtained at Fort Bridger, near the northeastern corner of Utah, and still within the Wahsatch region, the following additional species:—*Sciurus Noreboracensis*, *Empidonax minimus*, and *Quiscalus purpureus* var. *aeneus*. These will undoubtably yet be found in the Salt Lake Valley.

In addition to these species, Mr. H. W. Henshaw, of Lient. Wheeler's expedition, procured the *Melospiza palustris* in southern Utah, and obtained good evidence of the breeding of *Cistothorus stellaris* in Utah Lake.

Another very remarkable peculiarity of the Wahsatch region, which I wish particularly to mention in this connection, is the fact that, in the case of representative species or races, the eastern or Rocky Mountain forms breed there, while the more western forms replace them in the fall and winter. Thus *Zonotrichia leucophrys* and *Junco hyemalis* var. *caniceps* are the only species of these two genera which breed on the Wahsatch, and they nest there very numerously; but in the fall their place is taken by the western *Z. leucophrys* var. *Gambelii* and *J. hyemalis* var. *Oregonus*, which are unknown in summer. *Laniocera solitaria* var. *plumbea* breeds there, while var. *solitaria*, coming from the northwestward, replaces it in autumn. The same is the case with *Turdus Pallasii* var. *auduboni* (summer resident) and var. *nanus*

(autumnal migrant); and apparently the case also, with *Helminthophaga Virginica* (summer) and *H. ruficapilla* (autumn).

I shall notice first the results of Mr. Allen's investigations, as embodied in the list above cited; and as I desire to add some notes on species whose range, etc., Mr. Allen had no chance to determine, I shall go through the catalogue in regular order. (The numbers prefixed to the species correspond to those in Mr. Allen's catalogue.)

- P. 165. No. 2. = *T. Pallasii* var. *Auduboni*.
 P. 166. No. 10. *Cistothorus stellaris* is a misprint for C. (= *Telmatodytes*) *pulustris* var. *palustricola*.
 No. 5. (*Silvia arctica*.) I found this species breeding in Salt Lake City, on Antelope Island, in the lake, and on the Wahsatch Mountains, in June.
 No. 7. (*Regulus calendula*.) Found in the pine woods of Parley's Park (altitude 8,000 feet) in June, July and August, and no doubt breeds there.
 No. 16. (*Helminthophaga celata*.) Found by me breeding in the aspen woods at an altitude of 7,000-9,000 feet, in the Wahsatch.
 No. 17. (*Dendroica Auduboni*.) Breeding in the pine woods of the Wahsatch, at an altitude of 7,000-9,000 feet.
 No. 19. ("*D. nigrescens?*") This was very probably that species, as I found it breeding in tolerable abundance on the East Humboldt Mts. Mr. Aiken has also found it on the mountains of Colorado.
 P. 167. No. 22. (*Setophaga ruticilla*.) I found this species to be common in the Salt Lake region, both in the valley portions and in the lower portions of the cañons. Obtained in June on Antelope Island.
 No. 31. = *C. Ludovicianus* var. *excubitoroides*.
 No. 34. Should be *C. Cassini*.
 No. 38. Should be var. *atricaudus*.
 No. 39. Should be var. *confinis*.
 No. 41. We found the true *leucophrys* breeding abundantly in Parley's Park, and high up in City Creek Cañon, and, from May till the latter part of August, never saw a single specimen of *Z. Gambeli*.
 P. 168. No. 45. Should be *S. pallida* var. *Breweri*.
 No. 46. Should be var. *fallax*.
 No. 51. Should be var. *megalonyx*.
 No. 63. According to the strict rules of binomial nomenclature, the name "Apheloconus" (Cabanis) cannot be used for this genus, the proper name of which is *Cyanocitta* (Strickland) of prior date, and strictly congeneric type (*C. Californica*).
 No. 72. Should be var. *Henryi*.
 No. 74. No doubt var. *Gairdneri*, which species I found in July and August in Parley's Park.
 P. 170. No. 82. Should be var. *calurus*.
 P. 171. No. 92. Should be var. *umbelloides*.
 No. 103. Eggs obtained in Uintah Mts. in July. Very common in Wahsatch during summer.
 No. 104. Not seen by us in June on Antelope or Stansbury Islands, but observed in the ponds on the southeast shore of the lake.

- P. 172. No. 168. This is the *I. guarauna*, a south and middle American species common in the middle provinces of the United States (where *I. "Ordii"* does not occur). It is specifically distinct from "*Ordii*" which is absolutely identical with the *I. fulvinellus* of Europe.
- No. 109. *Ibis alba*. This locality is entirely new for this bird, it having not been previously obtained within the middle province of the United States.
- No. 114. Should be *R. elegans*.
- P. 173. No. 135. Another species new to the fauna of the Great Basin.

The following species, not given in Mr. Allen's list of autumnal birds in the vicinity of Ogden, were found by me breeding in Salt Lake City and the neighborhood:

No.	Species.	Where found.	Alt.	Numbers.
1.	TURDUS FUSCESCENS.	Willows of river valleys.	4,000-	Abundant.
2.	TURDUS SWAINSONI.	Mountain streams.	6,000 6,000+	"
3.	CATHERPES MEXICANUS, <i>var. CONSPIRUS.</i>	City Creek Cañon near Salt Lake City.	4,000- 5,000	Rare.
4.	CERTHIA AMERICANA.	Pine region of Wahsatch	8,000- 10,000	Not com- mon.
5.	SITTA CANADENSIS.	" " "	8,000- 10,000	Rare.
6.	PARUS MONTANUS.	" " "	8,000- 10,000	Common.
7.	HELMINTOPHAGA VIRGINIA.	Scrub oaks of foot-hills, and mahogany woods.	1,000- 6,000	"
8.	DENDROICA JESTIVA.	Everywhere.	4,000-	Abundant.
9.	COTYLE RIPARIA.	Valley portions.	10,000 4,000	"
10.	PROGNE SUBIS.	Aspen woods.	7,000- 9,000	"
11.	LANIIVIREO SOLITARIA, <i>var. PLUMBEA.</i>	"Mahogany" and cedar woods.	7,000- 10,000	Rare.
12.	CARPODACUS CASSINII.	Cottonwoods in parks.	6,000- 8,000	Abundant.
13.	CARPODACUS FRONTALIS.	Valleys.	1,000- 6,000	"
14.	CHRYSONOTRIS PINUS.	Pine region and aspens.	8,000- 10,000	Extremely abundant.
15.	CHONDESTES GRAMMACA.	Valleys- <i>artemisia.</i>	4,000- 5,000	Very abun- dant.
16.	ZONOTRICHIA LEUCOPHYRS.	Parks.	6,000- 8,000	Abundant.
17.	JUNCO HYEMALIS, <i>var. CANICEPS.</i>	Pine region.	8,000- 10,000	Common.
18.	POOSPIZA BILINEATA.	<i>artemisia</i> plains.	4,000- 5,000	Abundant.
19.	SPIZELLA PALLIDA, <i>var. BREWERI.</i>	" "	4,000- 5,000	"
20.	CALAMOSPIZA BICOLOR.	Parley's Park.	7,000	1 spec.
21.	PIPILO ERYTHROPHALMUS, <i>var. MEGALONYX.</i>	Scrub oaks of foot-hills.	4,000- 6,000	Very abun- dant.
22.	MYIARCHUS CRINITUS, <i>var. CINERASCENS.</i>	Parley's Park.	7,000	Rare.
23.	SAYORNIS SAYUS.	Valleys.	4,000- 5,000	Rath. com.
24.	EMPIDONAX TRAILII.	Antelope Island.	4,000?	1 spec.

No.	Species.	Where found.	Alt.	Numbers.
25.	<i>E. TRAILII,</i> <i>var. PUSILLUS.</i>	Willows along streams.	1,000- 7,000 4,000	Very abundant. Not common.
26.	<i>MOLOTHRUS PECORIS.</i>	Valleys.	8,000	Very rare.
27.	<i>PICUS PUBESCENTS,</i> <i>var. GAIRDNERI.</i>	Parks.	4,000- 10,000	Common.
28.	<i>PICUS VILLOSUS,</i> <i>var. HARRISH.</i>	All wooded portions.	7,000- 9,000	Very abundant.
29.	<i>SPHYROPICUS VARIUS,</i> <i>var. SUCHALIS.</i>	Aspen woods.	8,000- 10,000	Rare.
30.	<i>SPHYROPICUS THYROIDIUS.</i>	Pine region.	8,000- 10,000	"
31.	<i>SPHYROPICUS WILLIAMSONII.</i>	" "	8,000- 10,000	"
32.	<i>MELANERPES ERYTHROCEPHALUS.</i>	Salt Lake City.	4,000	1 spec.
33.	<i>MELANERPES TORQUATUS.</i>	Cottonwoods of river valleys.	4,000?	Not common.
34.	<i>TROCHILUS ALEXANDRI.</i>	Flowerly places everywhere.	4,000- 8,000	Common.
35.	<i>PANYPTILA MELANOLEUCA.</i>	City Creek Cañon.	5,000?	Rare.
36.	<i>BUTEO SWAINSONII.</i>	Everywhere.	4,000- 9,000	Very common.
37.	<i>FALCO LANARIUS,</i> <i>var. POLYAGRUS.</i>	Cliffs of cañons; valleys.	4,000- 9,000	Rare.
38.	<i>SYMPHEMIA SEMIPALMATA.</i>	Marshes.	4,000- 7,000	Very common.
39.	<i>NUMENIUS LONGIROSTRIS.</i>	Marshes of lake shores.	4,000	Abundant.
40.	<i>ÆGIALITIS CANTIANUS,</i> <i>var. NIVOSUS.</i>	Shore of Warm Spring Lake.	4,000	Very abundant.
41.	<i>PORZANA JAMAICENSIS?</i>	Parley's Park, meadows.	7,000	Not rare!
42.	<i>LARUS ARGENTATUS,</i> <i>var. CALIFORNICUS.</i>	Salt Lake.	4,000	Very abundant.
43.	<i>STERNA REGIA.</i>	" "	4,000	"
44.	<i>STERNA FORSTERI.</i>	" "	4,000	"

Mr. Allen obtained the following species in October, which I did not find among the summer birds. Those marked * are probably resident and breeding; the others are autumnal migrants from the northern and northwestern regions :—

- 1. *Anthus Ludovicianus.*
- 2. *Hemimanthophaga ruficapilla.*
- 3. *Dendroica Blackburniae.*
- *4. " *nigrescens.*
- *5. *Vireosylvia olivacea.*
- 6. " *solitaria.*
- *7. *Ampelis cedrorum.*
- 8. *Zonotrichia leucophrys, var. Gambelii.*
- 9. *Junco hyemalis, var. Oregonus.*
- *10. *Corvus Americanus.*
- 11. *Macrorhamphus grisens.*
- 12. *Pelidna alpina, var. Americana.*
- 13. *Gambetta melanoleuca.*
- 14. " *flavipes.*
- *15. *Ibis alba.*
- 16. *Rallus elegans (" crepitans").*
- 17. *Anser hyperboreus.*
- 18. *Chroicocephalus Philadelphia.*
- 19. *Xema Sabinii.*
- 20. *Podiceps cornutus.*

Mr. F. W. PUTNAM also read the following communication :—

THE BIRDS OF COLORADO.—BY ROBERT RIDGWAY.

The present paper is based upon the observations of Mr. Charles E. Aiken, made in El Paso county, Colorado, chiefly in the vicinity of Fountain.* The results of this gentleman's explorations in that field were communicated, from time to time, to Professor Baird, Dr. Brewer and myself, for use in our forthcoming work on North American Birds; but they are of such great interest that we cannot refrain from giving the public the benefit of them sooner than their appearance in our work.

In a paper on the birds collected by Mr. C. H. Holden, Jr., in the southern part of Wyoming,† Dr. Brewer has incorporated some notes furnished by Mr. Aiken upon the birds observed by him in the contiguous portions of northern Colorado; but Mr. Aiken having since sent to me a list of all the birds obtained and observed by him within the limits of the latter Territory, I have availed myself of his list as a nucleus for preparing a catalogue of all the species known to have been found within its limits. A few additions to Mr. Aiken's list have been made from Mr. Allen's "Ornithological Reconnoissance‡" of portions of Colorado, and from the collections made by the Government exploring parties under the direction of Dr. F. V. Hayden, U. S. Geologist, each species so included having the fact properly noted.

Mr. Aiken's researches were attended by many very important results. A new snowbird (*Junco hyemalis*, var. *Aikenii* RIDGWAY, Am. Nat., vol. vii, No. 10, Oct., 1873, p. 615), with two white bands on the wing, and of much larger size than the common form, was found among the high peaks and valleys of El Paso county; and two specimens of *Centronyx Bairdii* were taken in the same locality, being the second and third examples that were then known. These speci-

* See American Naturalist, vii, No. 1, p. 13. "A Glimpse at Colorado and its Birds. By C. E. Aiken."

† Notes on the Birds of Wyoming and Colorado Territories. By C. H. Holden, Jr.; with additional memoranda by C. E. Aiken. (Edited by T. M. Brewer, M.D.) Proceedings of the Boston Soc. of Nat. Hist., vol. xv, pp. 192-210: Dec., 1872. (142 species.)

‡ Notes of an Ornithological Reconnoissance of portions of Kansas, Colorado, Wyoming and Utah. By J. A. Allen. Bulletin of the Museum of Comparative Zoology, Cambridge, Mass., vol. iii, No. 6. Part iii. List of Birds observed at the eastern base of the Rocky Mountains in Colorado Territory, between Colorado City and Denver, in July and August, 1871; with annotations, pp. 117-153. (81 species.) Part vi. List of Birds observed in South Park, Park County, Colorado Territory, in July, 1871; with annotations, pp. 153-159. (54 species.) Part vii. List of Birds observed in the Vicinity of Mt. Lincoln, Park County, Colorado, from July 19 to July 26, 1871; with annotations, pp. 159-161. (36 species.)

mens, one procured in the fall and the other in the spring, are in different plumages from the type, which is a midsummer bird, thereby attesting the entire distinctness and perfect dissimilarity of this species from any other yet known. But important and creditable as these two discoveries are, the new facts in regard to the geographical distribution of certain species, brought to light by Mr. Aiken's investigations, are of even greater value.

These facts are, first, the much greater northeastward range of forms heretofore supposed to be confined to the Colorado Province, in Arizona; second, the occurrence in the mountains of Colorado of many species found upon the Sierra Nevada, which seem to be entirely wanting in the intermediate widely spread area of the Great Basin; and, third, the occurrence in the mountains of Colorado of many strictly eastern species, not previously traced beyond the eastern border of the Plains. The latter result of Mr. Aiken's collecting in Colorado, joined to that of Mr. Allen in the same Territory and that of the writer, and subsequently Mr. Allen and other ornithologists in Utah, establishes the Rocky Mountain Range as the dividing line, or, more properly, the meeting ground, of the avi-fauna of the Eastern and Western Regions, this system being, throughout its whole extent, almost as nearly related to the one as to the other,—though, as would be expected from the physical conditions of the country, the western element preponderates. Besides these discoveries in the geographical distribution of the species, new facts in relation to the range, habits or other peculiarities, of certain species are among other of the very satisfactory results of Mr. Aiken's ornithological explorations in Colorado. As a particular example, I may mention the discovery of the fact that *Corvus cryptoleucus*, formerly supposed to be confined to the Llano Estacado of Texas, is a very common bird along the eastern base of the Rocky Mountains, as far north as Cheyenne!

Upon examining a map of Colorado, it will be seen that the topography of this Territory is peculiarly favorable to an extremely varied fauna. The water-shed of the Continent runs across it almost in the middle, the streams on the eastern slope flowing into the Gulf of Mexico through the western tributaries of the Mississippi River, and those of the western slope emptying into the gulf of California, through the northeastern tributaries of the Rio Colorado. The direct result of its central position between several drainage systems is that the general eastern and western faunæ meet, or overlap; the birds characteristic of the Rio Grande district also enter its limits by following the head waters of that stream northward into San Luis Park and the adjacent country, while those of the Arizona district follow the northeastern tributaries of the Colorado River, and diffuse themselves over the western portion. In the northwestern corner

there is also a slight impress of the desert fauna of the Middle Province in consequence of the arid nature of the Green River district, while along the eastern base of the mountains the peculiar fauna of the Plains is the prevailing one upon the grassy foot-hills and prairies.

The following tables will show more clearly the distinct geographical elements in the Colorado avi-fauna. The species with an asterisk (*) prefixed were first found in Colorado by Mr. Aiken.

I. EASTERN SPECIES FOUND IN COLORADO.

	<i>Supposed Western Limit.</i>
1. Turdus fuscescens.	Salt Lake Valley; breeding; common. RIDGWAY.
2. Turdus Swainsoni.	E. Humboldt Mts., Nevada; Sept. RIDGWAY.
3. Galeoscoptes Carolinensis.	Islands of Salt Lake; breeding. RIDGWAY.
4. Harporrynchus rufus.	Eastern base of Rocky Mountains. GOVT SURVEY.
*5. Sialia sialis.	El Paso Co., Col. AIKEN.
*6. Helminthophaga peregrina.	El Paso Co., Col. AIKEN.
*7. Parula Americana.	El Paso Co., Col., May 11. AIKEN.
8. Dendroica coronata.	Denver, Col. WERNIGK. El Paso Co. AIKEN.
9. Setophaga ruticilla.	Islands of Salt Lake; breeding. RIDGWAY.
*10. Passerculus savanna.	El Paso Co., Col. AIKEN.
11. Zonotrichia leucophrys.	Wahsatch Mts.; W. slope; breeding. RIDGWAY.
12. Junco hyemalis.	Arizona. COVES. Utah. HENSHAW. Colorado. AIKEN.
13. Spizella monticola.	Col. R. KENNEDY. W. Na.; com. win. res. RIDGWAY.
14. Euspiza Americana.	Denver. ALLEN.
*15. Cyanospiza cyanea.	El Paso Co., Col. AIKEN.
16. Dolichonyx oryzivorus.	Ruby Valley, Nevada, Aug. and Sept. RIDGWAY.
*17. Icterus Baltimoro.	El Paso Co., Col. AIKEN.
18. Icterus spurius.	Denver, Colorado. ALLEN.
19. Quiscalus æneus.	Fort Bridger, Wyoming. DREXLER. Col. AIKEN.

Supposed Western Limit.

20. <i>Tyrannus Carolinensis.</i>	W. Na; breeding; S. L. Val.; breeding. RIDGWAY.
21. <i>Empidonax Traillii.</i>	Antelope Island, Salt Lake; June, 1869. RIDGWAY.
22. <i>Empidonax minimus.</i>	Fort Bridger, Wyoming. DREXLER. Col. AIKEN.
*23. <i>Sphyrapicus varius.</i>	Colorado. AIKEN.
*24. <i>Centurus Carolinus.</i>	Colorado. AIKEN.
25. <i>Melanerpes erythrocephalus.</i>	Salt Lake City; June. RIDGWAY.
26. <i>Nisus Cooperi.</i>	Doubtful.
*27. <i>Grus Americanus.</i>	Colorado. AIKEN.
28. <i>Actiturus Bartramius.</i>	Kamas Prairie, Utah; July; breeding. RIDGWAY.
*29. <i>Anas obscura.</i>	Colorado. AIKEN.
30. <i>Querquedula discors.</i>	W. Nevada; rare; breeding? RIDGWAY.

II. OTHER EASTERN SPECIES FOUND AT MORE WESTERN POINTS, NOT YET DETECTED IN COLORADO.

1. <i>Cistothorus stellaris.</i>	Utah Lake; breeding. HENSHAW.
2. <i>Helminthophaga ruficapilla.</i>	California. XANTUS and GRUBER. Ogden, Utah, Sept. ALLEN. E. Humboldt Mts., Na.; Sept. RIDGWAY.
3. <i>Dendroica Blackburniae.</i>	Ogden, Utah; Sept. ALLEN.
4. <i>Sciurus Noveboracensis.</i>	Fort Bridger, Wyoming. DREXLER.
5. <i>Lanivireo solitaria.</i>	W. and E. Humboldt Mts., Nevada; Sept. RIDGWAY. S. L. Val.; Sept. ALLEN.
6. <i>Vireosylvia olivacea.</i>	Fort Bridger, Wyoming. DREXLER. Salt Lake Val.; Sept. ALLEN.
7? <i>Plectrophanes Lapponicus.</i>	W. Nevada; winter. RIDGWAY.
8. <i>Melospiza palustris.</i>	Southern Utah; Oct. HENSHAW.
9. <i>Passerella iliaca.</i>	Saticoy, Cal.; Nov. DR. COOPER.
10. <i>Corvus Americanus.</i>	W. Nevada; Oct. and Nov. RIDGWAY.

11. *Coccygus Americanus.* Sac., Cal., June; RIDGWAY.
W. Nevada, July and Aug.; RIDGWAY. Tucson, Ariz.; breeding. BENDIRE. Fort Burgwyn, New Mex. DR. ANDERSON.
- 12? *Coccygus erythrophthalmus.* N. Cal. DR. NEWBERRY.
13. *Hylotomus pileatus.* Columbia River. TOWNSEND.
14. *Colaptes auratus.* California. COOPER.
15. *Ectopistes migratoria.* W. Humboldt Mts., Nevada; Sept. RIDGWAY.

III. SPECIES OF THE SOUTHERN BORDER OF THE U. S., WHICH HAVE BEEN FOUND IN COLORADO, BUT WHICH PROBABLY DO NOT OCCUR IN THE GREAT BASIN AT CORRESPONDING LATITUDES.

a. *Found from Florida to California.*

- *1. *Mimus polyglottus.* (Colorado bird is var. *caudatus* Baird.)
- *2. *Polioptila cærulea.*
- *3. *Guiraca cærulea.*
- *4. *Cardinalis Virginianus.* (var. *igneus* Baird.)

b. *From Florida to the Rocky Mountains.*

- *5. *Meleagris gallopavo.* (var. *Mexicana* Gould.)
- 6. *Demiegretta* — sp. ?

c. *From the Rio Grande to California.*

- 7. *Tyrannus vociferans.*
- *8. *Geococcyx Californianus.*
- *9. *Pipilo fusca.* (var. *mesoleuca* Baird.)

d. *Eastern base of Rocky Mountains, only.*

- *10. *Corvus cryptoleucus.*

IV. WESTERN SPECIES FOUND IN COLORADO, WHICH APPARENTLY DO NOT OCCUR IN CORRESPONDING LATITUDES IN THE GREAT BASIN.

- *1. *Sialia Mexicana.* (Found in western Iowa by Mr. Atkinson!)
- *2. *Lophophanes inornatus.*
- 3. *Sitta aculeata.*
- 4. *Sitta pygmæa.*
- *5. *Glaucidium Californicum.*

CATALOGUE OF THE BIRDS KNOWN TO OCCUR IN COLORADO; DISTINGUISHING (WITH AN ASTERISK) THOSE WHICH HAVE BEEN ASCERTAINED TO BREED WITHIN THE LIMITS OF THE TERRITORY, AND APPROXIMATELY INDICATING THEIR RANGE DURING THE BREEDING SEASON.

No birds are included in the following list which are not positively known to occur within the limits of Colorado, nor are any of those marked as breeding in the Territory so distinguished without as good reason. Many species not found by Messrs. Aiken and Allen have been obtained by one or more of the several Government expeditions, chiefly those in charge of Dr. F. V. Hayden, which have from time to time made portions of Colorado their field of exploration.

No.	Species.	Centre of abundance during breeding season.
*1.	Turdus fuscescens STEPHENS.	Along the lower streams.
*2.	Turdus Swainsoni CABANIS.	" " mountain "
*3.	Turdus Pallasi CABAN., <i>var. AUDUBONI</i> Baird.	Pine region.
*4.	Turdus migratorius L.	All wooded portions.
*5.	Galeoscoptes Carolinensis (L.).	Along streams;
*6.	Oreoscoptes montanus (TOWNS.).	Artemisia plains.
*7.	Harporrynchus rufus (L.), <i>var. LONGICAUDA</i> Baird.	Foot-hills.
*8.	Mimus polyglottus , <i>var. CAUDATUS</i> Baird.	
*9.	Cinclus Mexicanus SWAINS.	Mt. streams and torrents.
10.	Sialia sialis (L.).	
*11.	Sialia Mexicana SWAINS.	Foot-hills.
*12.	Sialia arctica SWAINS.	Bare portions of mountains, near tree-limit; occasionally breeds lower down.
*13.	Regulus calendula (L.).	Pine region.
14.	Regulus satrapa LICHT.	
15.	Polioptila cærulea (L.).	
*16.	Lophophanes inornatus (GAMB.).	Foot-hills?
*17.	Parus montanus GAMB.	Pine region.
*18.	Parus atricapillus L., <i>var. SEPTENTRIONALIS</i> Harris.	Streams of lower portions.

<i>No.</i>	<i>Species.</i>	<i>Centre of abundance during breeding season.</i>
*19.	Psaltriparus minimus (TOWNS.), <i>var. PLUMBEUS</i> Baird.	Cañon streams.
*20.	Sitta Carolinensis LATH., <i>var. ACULEATA</i> Cass.	Pine region.
*21.	Sitta pusilla LATH., <i>var. PYGMEA</i> Vig.	" "
*22.	Certhia familiaris L., <i>var. AMERICANA</i> Bonap.	" "
*23.	Salpinctes obsoletus (SAY).	Stony localities—everywhere.
*24.	Catherpes Mexicanus , <i>var. CONSPERSUS</i> Ridgw.	Rocky gorges or precipitous cañons.
*25.	Troglodytes ædon VIEILL., <i>var. PARKMANNI</i> Aud.	All wooded portions, chiefly on mountains.
26.	Troglodytes parvulus KOCH., <i>var. HYEMALIS</i> Vieill.	
*27.	Telmatodytes palustris (WILS.).	Rushes of lakes, ponds, etc., chiefly in valley portions.
*28.	Anthus Ludovicianus (G.M.).	Alpine summits.
*29.	Helminthophaga Virginiae BAIRD.	Foot-hills, scrub oaks and "mahogany" woods.
*30.	Helminthophaga celata (SAY).	Aspen woods, near the pine region.
31.	Helminthophaga peregrina (WILS.).	
32.	Parula Americana (L.).	
*33.	Dendroica æstiva (G.M.).	Woods everywhere, chiefly lower portions.
34.	Dendroica coronata (L.).	
*35.	Dendroica coronata (L.), <i>var. AUDUBONI</i> Towns.	Pine region.
36.	Dendroica nigrescens (TOWNS.).	Cedar, mahogany and piñon groves.
*37.	Geothlypis Philadelphia (WILS.), <i>var. MACGILLIVRAYI</i> Aud.	Cañons and ravines of mountains.
*38.	Geothlypis trichas (L.).	Along the lower streams, or marshy meadows.
*39.	Icteria virens (L.), <i>var. LONGICAUDA</i> Lawr.	Along streams below pine region.
40.	Myioictes pusillus (WILS.).	
*41.	Setophaga ruticilla (L.).	Streams below pine region.

No.	Species.	Centre of abundance during breeding season.
*42.	Progne subis (L.).	Pine region and adjoining aspen woods; occasionally lower.
*43.	Petrochelidon lunifrons (SAY).	Cliffs, everywhere below the Alpine region.
*44.	Hirundo horreorum BART.	Caves everywhere.
*45.	Tachycineta bicolor (VIEILL.).	With <i>P. subis</i> .
*46.	Tachycineta thalassina (SWAINS.).	In cliffs with <i>Pomoptila melanoleuca</i> ? occasionally in holes with <i>T. bicolor</i> and <i>P. subis</i> ?
*47.	Cotyle riparia (L.).	Earth banks, valley portions.
*48.	Stelgidopteryx serripennis (AUD.).	With <i>C. riparia</i> .
*49.	Vireosylvia gilva, <i>var. SWAINSONI</i> Baird.	All deciduous woods.
*50.	Lanivireo solitaria (WILS.), <i>var. PLUMBEA</i> Coues.	Foot-hills with <i>Helminthophaga Virginica</i> .
51.	Ampelis garrulus L.	
52.	Ampelis cedrorum VIEILL.	
*53.	Myiadestes Townsendii (AUD.).	Cedars of foot-hills and rocky gorges.
54.	Collurio borealis (VIEILL.).	
*55.	Collurio Ludovicianus (L.), <i>var. EXCUBITORIDES</i> Swains.	Open places at nearly all altitudes.
*56.	Pyranga Ludoviciana (WILS.).	All wooded places, but chiefly lower part of pine region.
57.	Hesperiphona vespertina , <i>var. MONTANA</i> Ridgw.	
58.	Pinicola enucleator (L.), <i>var. "CANADENSIS</i> Briss."	
*59.	Carpodacus Cassinii BAIRD.	Cottonwoods at lower edge of pine region.
*60.	Carpodacus frontalis (SAY).	Valley portions and foot-hills.
*61.	Chrysomitrис pinus (WILS.).	Pine region and adjoining aspen woods.
*62.	Chrysomitrис tristis (L.).	Valley portions.
*63.	Chrysomitrис psaltria (SAY).	Foot-hills?
64.	Loxia curvirostra L., <i>var. MEXICANA</i> Strickl.	

No.	Species.	Centre of abundance during breeding season.
65.	Leucosticte tephrocotis SWAINS.	
*66.	Leucosticte tephrocotis , <i>var. AUSTRALIS</i> Allen.	Alpine summits.
67.	Plectrophanes nivalis (L.).	
*68.	Plectrophanes ornatus (TOWNS.).	Plains — eastern base of Rocky Mountains.
*69.	Plectrophanes Maccowni LAWRI.	With <i>P. ornatus</i> .
70.	Centronyx Bairdii (AUD.). AIKEN.	Foot-hills.
*71.	Coturniculus passerinus , <i>var. PERPALLIDUS</i> Ridgw.	Meadows, val. portions.
72.	Passerculus savanna (WILS.).	
*73.	Passerculus savanna (WILS.), <i>var. ALAUDINUS</i> Bonap.	With <i>C. passerinus</i> .
*74.	Poocætes grammeneus , <i>var. CONFINIS</i> Baird.	Mountain parks, chiefly.
*75.	Chondestes grammaca (SAY).	Artemisia plains; occa- sionally mt. parks.
*76.	Zonotrichia leucophrys (FORST.).	Mountain parks.
77.	Zonotrichia leucophrys (FORST.), <i>var. INTERMEDIA</i> Ridgway.	
78.	Junco hyemalis (L.).	
79.	Junco hyemalis , <i>var. AIKENI</i> Ridgway.	
*80.	Junco hyemalis (L.), <i>var. CANICEPS</i> Woodh.	Pine region.
81.	Junco hyemalis (L.), <i>var. ANNECTENS</i> Baird.	
82.	Junco hyemalis (L.), <i>var. OREGONUS</i> Towns.	
*83.	Poospiza bilineata (CASS.).	Artemisia plains. (Col- orado drainage only?)
*84.	Poospiza Bellii , <i>var. NEVADENSIS</i> Ridgw.	With <i>P. bilineata</i> .
85.	Spizella monticola (GM.).	
*86.	Spizella socialis , <i>var. ARIZONE</i> Coues.	Woods, chiefly foot-hills.
*87.	Spizella pallida (SW.).	Only east of the foot of the mountains; plains and foot-hills.
*88.	Spizella pallida (SW.), <i>var. BREWERI</i> Cass.	Artemisia plains.

No.	Species.	Centre of abundance during breeding season.
*89.	Melospiza melodia (WILS.), <i>var. FALLAX</i> Baird.	Vicinity of streams up to the pine region.
*90.	Melospiza Lincolni (AUD.).	Mountain parks.
*91.	Passerella iliaca (MERR.), <i>var. SCHISTACEA</i> Baird.	Streams of the mountain parks.
*92.	Calamospiza bicolor (TOWNS.).	Plains, chiefly eastward of the mountains.
*93.	Euspiza Americana (G.M.).	Plains east of the moun- tains. Denver(ALLEN).
*94.	Hedymeles <i>melanocephalus</i> (SWAINS.).	Margin of streams below pine region.
95.	Guiraca cœrulea (L.).	
96.	Cyanospiza cyanea (L.).	
*97.	Cyanospiza amœna (SAY).	Streams and scrub below pine region.
98.	Cardinalis Virginianus (BRISS.), <i>var. IGNEUS</i> Baird?	
*99.	Pipilo erythrophthalmus (L.), <i>var. ARCTICUS</i> Swains.	Eastern foot-hills and val. streams east of the mts.
*100.	Pipilo erythrophthalmus (L.), <i>var. MEGALONYX</i> Baird.	Western foot-hills and mountain streams.
*101.	Pipilo chlorura (TOWNS.).	Mountain parks.
102.	Pipilo fusca Sw., <i>var. MESOLEUCA</i> Baird.	
103.	Eremophila alpestris (L.), <i>var. "CORNUTA</i> Wils."	
104.	Eremophila alpestris (L.), <i>var. OCCIDENTALIS</i> McCall.	
*105.	Eremophila alpestris (L.), <i>var. CHRYSONOTHA</i> Wagl.	Arid plains.
106.	Dolichonyx oryzivorus (L.), <i>var. ALBINUCHA</i> Ridgw.	
*107.	Molothrus pecoris (G.M.).	Chiefly the val. portions.
*108.	Xanthocephalus <i>icterocephalus</i> (BONAP.).	Marshes of the valleys.
*109.	Agelaius phœniceus (L.).	With <i>X. icterocephalus</i> .
*110.	Sturnella magna (L.), <i>var. NEGLECTA</i> Aud.	Meadows below the pine region.
111.	Icterus Baltimore (L.).	
*112.	Icterus Bullockii SWAINS.	All wooded portion be- low the pine region.

<i>No.</i>	<i>Species.</i>	<i>Centre of abundance during breeding season.</i>
113.	Icterus spurius (L.).	Streams of lower portions. Denver (ALLEN).
*114.	Scolecophagus cyanocephalus (WAGL.).	Foot-hills, cedar woods.
115.	Quiscalus purpureus, <i>var. ENEUS</i> Ridgw.	
*116.	Corvus corax L., <i>var. CARNIVORUS</i> Bartr.	Everywhere.
*117.	Corvus cryptoleucus COUCH.	
*118.	Picicorvus columbianus (WILS.).	Pine region.
*119.	Gymnokitta cyanocephala (PR. MAX.).	Piñon woods of foot-hills.
*120.	Pica caudata L., <i>var. HUDSONICA</i> J. Sabine.	Streams below the pine region.
*121.	Cyanura Stelleri (Gm.), <i>var. MACROLOPHIA</i> Baird.	Pine region.
*122.	Cyanocitta Floridana (BARTR.), <i>var. WOODHOUSEI</i> Baird.	Foot-hills and lower mountain streams.
*123.	Perisoreus Canadensis, <i>var. CAPITALIS</i> Baird.	Pine region.
*124.	Tyrannus Carolinensis (L.).	Lower portions and mountain parks.
*125.	Tyrannus verticalis SAY.	With <i>T. Carolinensis</i> .
*126.	Tyrannus vociferans SWAINS.	
*127.	Contopus borealis SWAINS.	Pine region.
*128.	Contopus Richardsonii SWAINS.	All woods below pine reg.
*129.	Myiarchus crinitus (L.), <i>var. CINERASCENS</i> Lawr.	Streams up to the mountain parks.
*130.	Sayornis Sayus BONAP.	Rocky arid portions, plains and cañons.
131.	Empidonax Traillii (AUD.).	
*132.	Empidonax pusillus (SWAINS.).	Willows along streams up to the parks.
*133.	Empidonax flaviventris BAIRD, <i>var. DIFFICILIS</i> Baird.	Pine region.
134.	Empidonax minimus BAIRD.	
135.	Empidonax Hammondii XANTUS.	
*136.	Empidonax obscurus (SWAINS.).	Aspen woods below the pine region.
*137.	Ceryle alcyon (L.).	Chiefly valley portions and parks.

No.	Species.	Centre of abundance during breeding season.
*138.	Chordeiles popetue (VIEILL.), <i>var. HENRYI</i> Cass.	Valleys, foot-hills and parks.
*139.	Antrostomus Nuttalli AUD.	Chiefly valleys and foot-hills; open places.
*140.	Panyptila melanoleuca BAIRD.	Rocky cliffs, chiefly in the mountains. Limestone precipices preferred.
*141.	Trochilus <i>Alexandri</i> BOURC. and MURS.	Green River district, or western slope only? up to the parks.
*142.	Selasphorus <i>platycercus</i> (SWAINS.).	Chiefly the parks.
143.	Geococcyx Californianus (LESS.).	
*144.	Picus villosum (L.), <i>var. HARRISII</i> AUD.	All wooded places.
145.	Picus pubescens (L.), <i>var. GARDNERI</i> AUD.	Lower edge of pine region.
146.	Picoides tridactylus (L.), <i>var. DORSALIS</i> Baird.	Pine region near the upper edge.
147.	Sphyrapicus varius (L.).	
*148.	Sphyrapicus varius , <i>var. NUHALIS</i> Baird.	Aspens just below the pine region.
*149.	Sphyrapicus thyroideus (Cass.)	Pine region.
150.	Centurus Carolinus (L.).	
151.	Melanerpes erythrocephalus (L.).	
*152.	Melanerpes torquatus (WILS.).	Foot-hills and valley streams.
*153.	Colaptes auratus (L.), <i>var. MEXICANUS</i> Swains.	All wooded places.
*154.	Speotyto cunicularia (MOL.), <i>var. HYPOGEA</i> Bonap.	Artemisia plains and foot-hills.
155.	Glaucidium passerinum (L.), <i>var. CALIFORNICUM</i> Sel.?	
*156.	Bubo Virginianus (Gm.), <i>var. ARCTICUS</i> Swains.	All wooded portions.
157.	Scops asio (L.), [<i>var. MACCALLI</i> Cass. ?].	
*158.	Otus vulgaris (LEM.), <i>var. WILSONIANUS</i> Less.	Willow thickets along streams.
159.	Falco communis GMEL., <i>var. ANATUM</i> Bonap.	Rocky places in vicinity of water.

No.	Species.	Centre of abundance during breeding season.
*160.	Falco lanarius L., <i>var. POLYAGRUS</i> Cass.	Rocky cañons and open plains.
161.	Falco columbarius LINN.	
162.	Falco Richardsonii RIDGW.	
*163.	Falco sparverius L.	All timbered places.
*164.	Circus cyaneus (L.), <i>var. HUDSONIUS</i> L.	Marshes, chiefly in the valleys.
*165.	Nisus fuscus (Gm.).	Lower wooded districts.
?166.	Nisus Cooperi (BONAP.).	
*167.	Nisus Cooperi (BONAP.), <i>var. MEXICANUS</i> Swains.	With <i>N. fuscus</i> .
168.	Astur palumbarius (L.), <i>var. ATRICAPILLUS</i> Wils.	
*169.	Buteo Swainsoni BONAP.	Everywhere; breeds chiefly among scattered aspens in parks and scrub oaks on foot-hills.
*170.	Buteo borealis (Gm.), <i>var. CALURUS</i> Cass.	Everywhere.
*171.	Archibuteo ferrugineus (LICHT.).	
172.	Archibuteo lagopus (BRÜNN.), <i>var. SANCTI-JOHANNIS</i> Gm.	
*173.	Aquila chrysaëtus L., <i>var. CANADENSIS</i> L.	Rocky portions of the mountains.
174.	Haliaëtus leucocephalus (BRİSS.).	Vicinity of rivers and lakes.
175.	Pandion haliaëtus (L.), <i>var. CAROLINENSIS</i> Gm.	With <i>H. leucocephalus</i> .
*176.	Cathartes aura (L.).	Everywhere below the pine region.
*177.	Zenædura Carolinensis (L.).	Everywhere below the pine region.
*178.	Meleagris gallopavo L.	
*179.	Canace obscura (SAY).	Pine region and parks.
*180.	Bonasa umbellus (L.), <i>var. UMBELLOIDES</i> Douglas.	Pine region.
*181.	Centrocercus urophasianus (BONAP.).	Artemisia plains.
*182.	Pediocætes phasianellus (L.), <i>var. COLUMBIANUS</i> Ord.	Rye grass meadows.
*183.	Lagopus leucurus SWAINS.	Alpine summits.

<i>No.</i>	<i>Species.</i>	<i>Centre of abundance during breeding season.</i>
184.	Grus Americanus (L.).	
*185.	Grus Canadensis (L.).	Marshy meadows, chiefly in valleys.
*186.	Ardea herodias L.	Lower portions.
187.	Demiegretta —sp.?	
*188.	Botaurus lentiginosus STEPH.	Lower portions.
*189.	Ibis guarauna (Gm.).	Marshes of valleys.
*190.	Ægialitis vociferus (L.).	Streams below the pine region.
*191.	Ægialitis montanus (Towns.).	
192.	Charadrius pluvialis (L.), <i>var. VIRGINICUS</i> Borek.	
193.	Gallinago gallinaria (Gm.), <i>var. WILSONII</i> Temm.	
194.	Macrorhamphus griseus (Gm.).	
195.	Pelidna alpina , <i>var. AMERICANA</i> Cass.	
196.	Actodromus maculatus (VIEILL.).	
197.	Actodromus Bairdii COUES.	
198.	Actodromus minutilla (VIEILL.).	
199.	Ereunetes pusillus (L.).	
*200.	Symphebia semipalmata (Gm.).	Streams or marshes of valleys and parks.
201.	Gambetta melanoleuca (Gm.).	
202.	Gambetta flavipes (Gm.).	
*203.	Rhyacophilus ochropus (L.), <i>var. SOLITARIUS</i> (Wils.).	Valleys and parks.
*204.	Tringrides hypoleucus (L.), <i>var. MACULARIUS</i> (L.).	With <i>R. solitarius</i> .
205.	Actiturus Bartramius (Wils.).	Prairies and meadows, chiefly east of the mts.
*206.	Numenius longirostris Wils.	Meadows of valleys.
*207.	Recurvirostra Americana Gm.	Marshes, chiefly in the vicinity of alkaline ponds.
*208.	Himantopus nigricollis VIEILL.	With <i>R. Americana</i> .
*209.	Phalaropus Wilsonii SAB.	Ponds of val. portions.
210.	Rallus Virginianus L.	
*211.	Porzana Carolina VIEILL.	Marshes of parks and valleys.
*212.	Fulica Americana Gm.	Ponds, chiefly in valleys.

No.	Species.	Centre of abundance during breeding season
213.	Cygnus Americanus SHARPLESS.	
*214	Branta Canadensis (L.).	Secluded lakes.
215.	Branta Canadensis (L.), <i>var. HUTCHINSON</i> Rich.	
*216.	Anas boschas L.	Ponds and marshy mead. chiefly in the valleys.
217.	Anas obscura G.M.	
218.	Dafila acuta (L.).	With <i>A. boschas</i> .
*219.	Nettion Carolinensis (G.M.).	
*220.	Querquedula discors (L.).	
*221.	Querquedula <i>cyanoptera</i> (VIEILL.).	
*222.	Spatula clypeata (L.).	
*223.	Chaulelasmus streperus (L.).	
*224.	Mareca Americana (G.M.).	
225.	Aix sponsa (L.).	
226.	Fulix marila (L.).	
227.	Fulix marila (L.). <i>var. AFFINIS</i> Forst.	
228.	Fulix collaris (DONOV.).	
229.	Aythya Americana (EYTON).	
230.	Aythya vallisneria (WILS.).	
231.	Bucephala Americana (BON.).	
232.	Bucephala albovola (L.).	
*233.	Erismatura rubida (WILS.).	
234.	Mergus merganser L., <i>var. AMERICANUS</i> Cass.	
235.	Lophodytes cucullatus (L.).	
*236.	Pelecanus erythrорhynchus G.M.	
237.	Larus — sp?	
238.	Larus Delawarensis ORD.	
*239.	Sterna Forsteri NUTT.	
240.	Hydrochelidon fissipes (L.).	
241.	Colymbus glacialis L., <i>var. TORQUATUS</i> Brünn.	
242.	Podiceps auritus (L.), <i>var. CALIFORNICUS</i> Herrm.	
243.	Podilymbus podiceps (L.).	

*The ducks and other *Natatores* nearly all breed in the same localities.

NOTES ON THE SPECIES IN THE PRECEDING CATALOGUE.

11. **STALIA MEXICANA.** I have not seen specimens of this species from the Rocky Mountains, and do not know whether they present any features of a geographical race different from that found on the Pacific coast. On the eastern base of the Sierra Nevada, I obtained specimens without a trace of brown on the back, and with that of the breast divided into two isolated patches—one on each side—by a blue "isthmus," connecting the blue of the throat and that of the abdomen.

16. **LOPHOPHANES INORNATUS.** In this species the difference between Pacific coast and Rocky Mountain specimens is very marked, the former being much browner than the latter; but there being no difference in proportions, or other respects, the differentiation scarcely amounts to that of a race.

24. **CATHERPES MEXICANUS**, var. **CONSPERSUS** Ridgway. See Am. Nat., vol. vii, No. 10, Oct., 1873, p. 603.

57. **HESPERIPHONA VESPERTINA**, var. **MONTANA** Ridgway. See "Birds of California," I, p. 175. Two specimens from Mr. Charles Douglas, of Waukegan, Illinois, collected at the latter place in the winter of 1873 (January or February), are perfectly typical examples of this southern race, the characteristic features of which are the absence of the white spots on tail feathers, tail-coverts and primaries, and much narrower yellow frontlet than in the northern form. In this case we see, as in that of *Chrysomitrис psaltria*, an instance of increased melanism to the southward.

64. **LOXIA CURVIROSTRA**, var. **MEXICANA**. Though this is the resident form on the high mountains of Colorado, the var. *Americana* no doubt occurs in winter. I obtained the latter in the East Humboldt Mountains in September, and it was then common there. *L. leucoptera* was also common at the same time, and a beautiful male was seen about the middle of August on that range, leading to the suspicion that the species may breed on the higher portions of the Rocky Mountains and justifying the belief that it will at least be found in winter on the mountains of Colorado.

66. **LEUCOSTICTE TEPHROCOTIS**, var. **AUSTRALIS** Allen. This form was first noticed by Mr. Allen in the "American Naturalist," and subsequently in the "Bulletin of the Museum of Comparative Zoology," as cited below. Its synonymy and characters are as follows:—

Leucosticte tephrocotis, var. *Australis* ALLEN.

Leucosticte tephrocotis ALLEN, Am. Nat., vi, No. 5, May, 1872. *Ib.*, Bull. Mus. Comp. Zool., vol. iii, No. 6, p. 177.

Ch. Similar to var. *tephrocotis*, but without any gray on the head, the red of the abdomen and wing-coverts bright carmine, instead of dilute rose color, and the bill deep black, instead of mostly yellow. Prevailing color umber brown (more earthy than in *tephrocotis*) becoming darker on the head, and approaching to black on the forehead. Nasal tufts white. Wings and tail dusky, the secondaries and primaries skirted with paler; lesser and middle wing-coverts, and upper and lower tail-coverts, broadly tipped with rosy carmine, producing nearly uniform patches. Abdominal region with the feathers broadly tipped with bright carmine or intense crimson, this covering, nearly uniformly, the whole surface. Bill and feet deep black.

Male (original No. 963, Mt. Lincoln, Colorado Territory, July 25, 1871; J. A. Allen). Wing, 4·20; tail, 3·10; culmen, .45; tarsus, .70; middle toe, .60.

Female (No. 960, same locality, etc.). Wing, 4·00; tail, 3·00. Colors paler and duller, with the red almost obsolete.

Hab. Mt. Lincoln, Colorado. Breeding above the timber line (Allen).

70. CENTRONYX BAIRDII (Aud.) = *C. OCHROCEPHALUS* Aiken. Mr. Aiken has collected a second specimen of this bird at the same locality where the first one was procured, in El Paso Co. This one, collected May 6, 1873, being in spring plumage is so decidedly intermediate between Audubon's original type of *C. Bairdii* (in worn, faded midsummer dress) and the autumnal specimen which Mr. Aiken characterized as *C. ochrocephalus* (Am. Nat., vol. vii, No. 4, p. 236) that there is every probability of all three specimens being the same species in different seasonal stages. Mr. Aiken is not to blame for describing his first specimen as a new species, for he, not having an opportunity to compare it with the original *C. Bairdii*, trusted the identification of the specimen to me, and at my suggestion described it as new, the great difference between the two specimens warranting, in my opinion at the time, a specific separation.

The last specimen collected by Mr. Aiken is in my collection (No. 2,141). Its measurements are as follows:—wing, 2·80; tail, 2·10; culmen, .45; tarsus, .80; middle toe, .60. "Length, 5·62; extent, 9·04. Legs and lower mandible, flesh color; upper mandible, horn color, the tip lighter; toes and claws dusky." No. 1,266, Aiken's Coll., El Paso Co., Colorado, May 6, 1873.

Dr. Elliott Coues, the naturalist of the Northern Boundary Survey, in charge of Commissioner A. Campbell, has taken during the past summer, but since Mr. Aiken's captures, about seventy specimens of

this species along the northern border of Dakota, in the neighborhood of the head waters of the Souris River. For a very interesting article in this connection the reader is referred to the "American Naturalist," vol. vii, Nov., 1873, p. 695.

I am also informed by letter from Mr. H. W. Henshaw, the naturalist of the government exploring expedition in New Mexico and Arizona, in charge of Lieutenant George M. Wheeler, U. S. Engineer Corps, that he has collected about thirty specimens during the course of their summer's explorations, in southeastern Arizona and western New Mexico. This species cannot, therefore, be longer considered one of the rare birds of North America.

71. COTURNICULUS PASSERINUS, var. PERPALLIDUS Ridgway. See Coues' Key, p. 137.

79. JUNCO HYEMALIS, var. AIKENI Ridgway. See Am. Nat., vol. vii, No. 10, p. 615; Oct., 1873.

84. POOSPIZA BELLII, var. NEVADENSIS Ridgway.

Cir. Like *P. Bellii*, but much larger and all the colors paler; purer ashy above, with very distinct streaks on the back. Wing, 3·20 (instead of 2·50); tail, 3·20 (instead of 2·50); culmen, .35; tarsus, .76.

Hab. Entire area of the Middle Province of the U. S.; east to Green River, Wyoming; northward resident to beyond the parallel of 40°.

87. SPIZELLA PALLIDA. The possibility of *S. pallida* Swain. and *S. Breweri* Cass. being regional modifications of the same species is rendered very doubtful by two facts, viz.: (1), that they have been taken together at the same locality, and (2) that intermediate specimens have not been seen. Mr. Allen collected numerous typical examples of both forms at Cheyenne, yet his collections did not contain a single specimen which could not be referred immediately to one or the other. *S. pallida* replaces *S. Breweri* in Lower California, thus having a somewhat remarkable range, exactly paralleled, however, by that of *Zonotrichia leucophrys*, which is abundant at the cape to the exclusion of var. *gambelii*.

91. PASSERELLA ILIACA (L.), var. SCHISTACEA Baird. Though no specimens intermediate between *iliaca* and *schistacea* have yet been found, Dr. Cooper has recently (Nov., 1872) collected, at Saticoy, California, a specimen which combines about equally the characters of *iliaca* and *Townsendii*. The latter grades into *schistacea* through Fort Tejon specimens.

98. For a synopsis of the genus *Cardinalis*, see Am. Nat., vol. vii, No. 10, p. 618; Oct., 1873.

102. PIPILo FUSCA (Swains.), var. MESOLEUCA Baird. That the *P. fusca* of Swainson and the *P. mesoleuca* of Baird are not exactly the same bird is proven by a comparison of Mexican examples with specimens from the Colorado Province of the U. S. (See Coues' Key, p. 152.)

100. PIPILo ERYTHROPHITHALMUS (Sw.), var. MEGALONYX Baird. On p. 117 of his "Ornithological Reconnoissance," Mr. Allen remarks in relation to the black Pipilos that "in Mexico, *P. megalonyx* is well known to grade through *P. macronyx* into *P. macrourus*." This is a great mistake, for though *megalonyx* certainly does run into *macrourus*, the latter is the southern extreme of differentiation in the species, *P. macronyx* being a widely distinct species, about as nearly related to *P. chlorura* as to the forms of *erythrophthalmus*.

103, 104 and 105. EREMOPHILA ALPESTRIS (L.), vars. "CORNUTA" Wils., OCCIDENTALIS McCall, and CHRYSOLEMA Wagl. These are three geographical races of one species, which become mingled in the course of their migrations. Var. *cornuta*, most like true *alpestris* of Europe, and indeed hardly distinguishable, breeds in the northern portions of the eastern region from Hudson's Bay to Illinois; var. *occidentalis* is a pallid, white-throated form which breeds on the northern plains; var. *chrysolema* is a resident southern or subtropical form, of smaller size, longer bill and much deeper colors. All three become mixed in winter.

106. DOLICHONYX ORYZIVORUS, var. ALBINUCHA Ridgway. Ch. Similar to eastern specimens, var. *oryzicorus*, but the black more intense and uniform, the nuchal patch immaculate creamy-white, or very pale ochraceous; scapulars and lower rump pure white, not tinged with ashy, and upper part of the rump scarcely tinged with ash. Wing, 3·90-4·10; tail, 3·10; culmen, .55-.60; depth of bill, .30-.35; tarsus, 1·10; middle toe, .85-.90.

Hab. Missouri Plains and Rocky Mountains, west to Ruby Valley, Nevada; Salt Lake Valley.

115. QUISCALUS PURPUREUS, var. AENEUS Ridgway. In his "Key to North American Birds," Dr. Cones is at fault in several respects in his statements regarding the purple grackles of the United States. Of the present form, Dr. Cones remarks (p. 161):—

"*Obs.* The *Quiscalus aeneus*, lately described as a new species by Mr. Ridgway, appears to be based upon a special plumage of *Q. purpureus*; and since it does not prove to be confined, as its describer believed, to any particular region, I should judge it not entitled to rank as a geographical variety." Both of these remarks need correction. In the first place, my *Quiscalus aeneus* was based upon a form

which was distributed, as its habitat was then known, over the entire region between the Alleghany and Rocky Mountains, and also the interior of British America, besides the eastern portion of the latter country, and southward to Maine. Not a single specimen had then, nor has since, been seen from any part of this vast extent of territory, which approached in characters the form peculiar to the southern Atlantic states—*Q. purpureus*. The latter was at that time supposed to extend northward to Nova Scotia; this mistake being brought about by the entire want of specimens from the New England states. Abundant material since received from all points along the Atlantic coast, however, shows that only *Q. aeneus* is found from New York City and Long Island northeastward, and that it is only as far north as northern New Jersey and eastern Pennsylvania that *purpureus* extends, except as a straggler. Even at Washington, D. C., *aeneus* is by no means rare, but, strange to say, when mixed with *purpureus*, still retains its own characteristics. In the parks of that city I have seen pairs of both species walking tamely about on the grass, *but never saw the two forms paired together*, and could even distinguish the two by their different appearance and actions before I was near enough to distinguish by coloration. The proportionate numbers of the two at Washington are about one pair of *aeneus* to fifty or seventy-five pairs of *purpureus*. Nearer the coast, and especially farther southward, east of the Alleghanies, the former disappears altogether. My present view is, that *aeneus*, *purpureus* and *aglaeus*, are three climatic, or geographical races, of one species; at least they are descended from one primitive stock; *purpureus* is intermediate between the two opposite extremes or most widely differentiated forms, *aeneus* and *aglaeus*, but more so in habitat than in characters, for while *purpureus* passes by a gradual transition into *aglaeus* through specimens from northern Florida, *aeneus* is almost abruptly separated, and, even when associated geographically, preserves its own distinctive characters with such unusual uniformity that it is a question whether it is not already differentiated beyond the "varietal stage."

123. PERISOREUS CANADENSIS, var. CAPITALIS Baird.

Cn. (61,084. Henry's Fork, Wyoming Ter.; F. V. Hayden.) Above fine light bluish plumbeous, becoming much lighter on the anterior portion of the back; tertials, secondaries, wing-coverts, primaries and tail feathers passing into whitish terminally, forming on the latter quite broad and distinct tips. A nuchal patch of a tint slightly darker than the back, and separated from the latter by the hoary whitish of the anterior dorsal region. Whole of the head, except the nuchal patch, with the anterior lower parts, as far as the breast, pure white; rest of the lower parts ashy-white, becoming gradually more ashy

posteriorly. Wing, 5·80; tail, 6·00; culmen, 1·00. *Young* (18,440, Ft. Benton, April 23, J. A. Mullen). Generally ashy plumbeous, with a decided bluish cast to the wings and tail; orbital region, lores, forehead and nasal tufts blackish; crown, a broad space below the eye, from the bill across the auricular, with the middle of the abdomen, pale hoary ash. Wings and tail as in the adult.

Hab. Rocky Mountains north of New Mexico.

The three very well marked climatic races of this species may be defined as follows:

A. Dusky nuchal hood reaching forward to, or to in front of, the eyes; sooty plumbeous black.

1. White frontal patch narrower than the length of the bill, blending gradually with the blackish of the crown. Upper parts umber brownish. *Young*. Entirely plumbeous-brown, the feathers of the crown bordered with paler. Beneath paler. Wing, 5·50; tail, 5·40; culmen, .90; depth of bill, .30. *Hab.* Northwest coast, from the Columbia to Alaska. *Var. obscurus.**

2. White frontal patch much broader than the length of the bill; abruptly defined, with a convex outline, against the dusky of the occiput. Upper parts dull plumbeous. *Young*. Entirely uniform dark plumbeous. Wing, 5·25; tail, 5·80; culmen, .95; depth of bill, .35. *Hab.* British America, from the Yukon district of Alaska to Maine and Labrador. *Var. Canadensis.*

B. Dusky nuchal hood confined to the nape, and bluish plumbeous.

3. White frontal patch covering the whole pileum, and melting gradually into the plumbeous of the nape; upper parts hoary plumbeous, inclining to bluish-ash. *Young*. Bluish plumbeous, inclining to ashy-white on the crown and cheeks. Wing, 6·00; tail, 6·00; culmen, 1·00; depth of bill, .31. *Hab.* Rocky Mountains of the United States. *Var. capitalis.*†

141. The STELLULA CALLIOPE Gould is also likely to occur on the western slope of Colorado. I found it as far east as the East Humboldt Mountains in eastern Nevada.

146. PICOIDES TRIDACTYLUS (L.), var. DORSALIS Baird. The American three-toed woodpeckers are clearly referrible to the

* *Perisoreus Canadensis*, var. *obscurus* Ridgway, MSS.

† *Perisoreus Canadensis*, var. *capitalis* Baird, MSS.

European species (*P. tridactylus* L.). The latter has two well-marked climatic races — a large, very light colored northern one (var. *crissoleucus* Brandt) and a smaller, darker southern one (var. *tridactylus* L.). The former has the back white longitudinally, somewhat like our var. *dorsalis*, but differs very decidedly in other respects. One is hardly justified in saying that "all the species of this genus are unquestionably modified derivatives of one circumpolar stock" (see Coues, Key, p. 194); and the statement that "the American seem to have become completely differentiated from the Asiatic and European" is equally objectionable. A comparison of *dorsalis* and *Americanus* with the Old World forms, shows plainly that the amount of differentiation scarcely comes up to the qualifications of a difference of race. A comparison of *arcticus* with the rest also shows that bird to possess every requirement of an independent, and truly distinct species.

149. *SPIHYRAPICUS THYROIDEUS* (Cass.). Though this species is not given in Mr. Allen's list, he nevertheless collected it in Colorado, but the specimen being in immature plumage was identified as *S. nuchalis*.

155. *GLAUCIDIUM* (*PASSERINUM*, var. *CALIFORNICUM*?). Not having seen the specimens of the pygmy owl collected by Mr. Aiken in Colorado, I cannot say positively that they belong to this species. They are quite as likely to be *G. ferrugineum*, which was collected in Arizona by Lieut. Charles Eendire, U. S. A. (See Am. Nat. vi, 370, and Coues' Key, p. 206.)

178. *MELEAGRIS GALLOPAVO*. Mr. Aiken has not informed me whether the Colorado bird is var. *gallopavo*, extending northward along the mountains, or the eastern form (var. *sylvestris*) reaching westward to the mountains by following the wooded valleys of the rivers across the plains. It is most likely, however, to be the former.

187. *DEMIEGRETTA* sp? This is probably the *D. Ludoviciana*. See ALLEN, Bull. Mus. Comp. Zool., Vol. iii, No. 6, p. 153.

237. *LARUS* sp.? This gull is probably the *L. argentatus*, var. *Californicus*, which I found breeding very abundantly at Pyramid Lake, Nevada, and less numerously at Great Salt Lake, on Carrington Island.

It is difficult to see Dr. Coues' reasons for referring this form to *Delawarensis*, since it has no points at all in common with the latter species, from which it is perfectly distinct, though clearly referrible to *argentatus*.

REGULAR MEETING, MONDAY, Nov. 17, 1873.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Mary J. Safford Blake, Boston, Nov. 6; Samuel A. Drake, Boston, Nov. 12; A. P. Hamblet, Oct. 22; C. H. Higbee, Boston, Nov. 11; T. Morong, Ipswich, Nov.; Edward Palmer, Cambridge, Oct. 2; W. S. Perry, Geneva, Nov. 3, 11; C. P. Preston, Danvers, Nov. 10; John L. Robinson, Wenham, Nov. 15; A. Stevens, North Andover, Oct. 28; John A. Vinton, Winchester, Nov. 5, 15; Ashbel Woodward, Franklin, Conn., Nov. 3; William H. Yeoman, Columbia, Conn., Sept. 22; Cincinnati Public Library, Oct. 31; New York Genealogical and Biographical Society, Nov. 15; Wisconsin State Historical Society, Nov. 11; U. S. Dept Agriculture, Washington, Nov. 12; U. S. Naval Observatory, Washington, Nov. 3.

The LIBRARIAN reported the following additions :—

By Donation.

BALLARD, JOSEPH, of Boston. Account of the Poor Fund and other Charities held in trust by the Old South Society of Boston. 1 vol. 8vo.

BEMIS, LEWIS, of West Chester, Pa. Historical Sketches of Plymouth, Luzerne Co., Pa., by H. B. Wright. 1 vol. 8vo.

DIKE, MRS. JOHN, HEIRS OF THE LATE. Newton's Works, 5 vols. 8vo. Miller's Retrospect, 2 vols. 8vo. Evangelical Magazine, 1 vol. 8vo. Sermons by S. Worcester, D.D. 1 vol. 8vo. Sentiments on Resignation, 1 vol. 12mo. Life of Miss Anthony, 1 vol. 8vo. Letters on Early Ringing, 1 vol. 12mo. South-Side View of Slavery, 1 vol. 12mo. Sermons by E. Thayer, 1 vol. 12mo. Review of the Mexican War, 1 vol. 12mo. Letters and Papers of the late Rev. Thomas Scott, D.D. 1 vol. 12mo. Family Prayers, 1 vol. 12mo. Force of Truth, 1 vol. 18mo. Scripture Promises, by S. Clark, 1 vol. 12mo. The Family Instructor, 1 vol. 12mo. Moral Sketches by H. More, 1 vol. 16mo. Chalmers' Works, 3 vols. 12mo. Salem Directories for 1837, 1842, 1846, 1851, 1855, 5 vols. 16mo. Monthly Anthology, 1 vol. 8vo. Beauties of the Spectator, 1 vol. 12mo. Boston Almanac, 1841, 1 vol. 12mo. Questions of Scripture Biography, 3 vols. 16mo. Land of Canaan, 1 vol. 12mo. Almanacs, 39. The Christian World, 91 nos. The Panoplist, 29 nos. The American and Foreign Christian World, 58 nos. Missionary Herald, 75 nos. The Home Missionary, 17 nos. African Repository, 61 nos. Miscellaneous pamphlets, 50.

UNKNOWN. Memoirs of the Marstons of Salem. 8vo pamph.

U. S. NAVAL OBSERVATORY, of Washington, D. C. Washington Astronomical Observations, 1851-1852, 1 vol. 4to. Astronomical and Meteorological Observations, 1870, 1 vol. 4to. Catalogue of Stars, 1845-1871, 1 vol. 4to. Washington Observations for 1870, Appendix, 1 vol. 4to. Washington Zones, 1866-1869, 3 vols. 4to.

J. P. Franks, of Salem, was elected a resident member.

BULLETIN

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REGULAR MEETING, MONDAY, Nov. 17, 1873.

[Continued.]

MR. F. W. PUTNAM presented the following communication:—

ON SOME NEW FORMS OF AMERICAN BIRDS.*

BY SPENCER F. BAIRD AND ROBERT RIDGWAY.

THE following diagnoses conclude a series commenced in the October number of the "American Naturalist," and are believed to be all the undescribed North American land birds known to the authors at the present time. A more detailed account of them is given in our "History of North American Birds," soon to be issued by Little & Brown, Boston.

Leucosticte tephrocotis, var. *australis* ALLEN.

Leucosticte tephrocotis ALLEN. Amer. Nat., vi, May, 1872. IB. Bull. Mus. Comp. Zool., iii, No. 6, pp. 121, 162 and 177.

Leucosticte tephrocotis, var. *australis* ALLEN. (Ms. name on labels.)

*Continued from the October number of the "American Naturalist," Vol. vii, 1873.

CH. Differing from var. *tephrocotis* in having no gray on the head, the bill deep black, and the red an intense carmine; the latter, in high plumaged males, reaches forward, in a strong tinge, to the chin and cheeks. *Hab.* Mt. Lincoln, Colorado. Breeding above the timber line, at altitude of about 12,000 feet. (Types, ♂, No. 963, J. A. A.; ♀, No. 960, J. A. A., Mt. Lincoln, Colorado, July 25, 1871.)

Ammodromus maritimus, var. *nigrescens* RIDGWAY.

CH. Brownish black above, the outer edges of the dorsal feathers narrowly whitish. Beneath pure white, thickly streaked everywhere with black. Supra-loral spot and bend of wing bright yellow. Wing, 2·40; tail, 2·45; culmen, .45; tarsus, .90; middle toe, .60. *Hab.* Southern Florida (Indian River). (Type, No. 1855, ♂ ad., Indian River, Fla., Apr. 4, 1872. Mus. R. R.)

REMARKS.—We owe this new, and very remarkable, race to the indefatigable researches of Mr. C. J. Maynard, who procured a number of specimens. The form is a very striking and extreme example of the melanistic tendency to the southward.

Zonotrichia leucophrys, var. *intermedia* RIDGWAY.

CH. Resembling var. *Gambeli* of the Pacific coast, but colors purer and grayer, the dorsal streaks chestnut-brown instead of sooty-black, and the ash of the breast purer. *Hab.* Middle Province of the U. S., north to Alaska in the interior.

Poospiza Bellii, var. *Nevadensis* RIDGWAY.

CH. Like var. *Bellii*, but much larger, and the colors lighter and grayer, the back with very distinct streaks. *Hab.* Great Basin of the U. S., throughout its whole extent. (Type, No. 53, 516, ♂ ad., West Humboldt Mts., Nevada.)

Dolichonyx oryzivorus, var. *albinucha* RIDGWAY.

CH. Nuchal patch pure white, or immaculate creamy white. Scapulars and lower back scarcely tinged with ashy. Black of the plumage more intense and uniform than in eastern *oryzivorus*. *Hab.* Plains of the U. S., from Missouri tributaries to eastern border of Great Basin. (Type, No. 1739, Mus. R. R., ♂ ad., Ogden, Utah.)

Perisoreus Canadensis, var. *capitalis* BAIRD.

CH. Similar to *Canadensis*, but much lighter colored, and with the bill slenderer. The head wholly white, except the nape, which is plumbeous; plumbeous of the body of a fine ashy tint. *Young* more uniformly colored, but altogether paler than the corresponding age of *Canadensis*. *Hab.* Rocky Mountains of the U. S. (Types, No. 61,084, Mus. S. I., *adult*, Henry's Fork, Wyoming Ter. and No. 18,440, *young*, Fort Benton.

Perisoreus Canadensis, var. *obscurus* RIDGWAY.

CH. Much darker than *Canadensis*, the head blackish to the forehead, which is only narrowly whitish. *Young* much darker than that of *Canadensis*. *Hab.* Northwestern coast, from Oregon to Alaska. (Types, No. 8,454, *adult*, Shoalwater Bay, Washington Ter., and No. 5,904, *young*, same locality.)

Cyanocitta ultramarina, var. *Arizonae* RIDGWAY.

CH. Similar to variety *sordida*, of eastern Mexico, but blue much paler and more greenish, the whole dorsal region decidedly ashy. *Hab.* Southern Rocky Mountain region of U. S. (Types, No. 18,279, *ad.*, Fort Buchanan, Arizona; and No. 8,469, *juv.*, Copper Mines, Arizona.)

Cyanocitta Floridana, var. *Sumichrasti* RIDGWAY.

CH. Most nearly resembling var. *Californica*, but the superciliary white streak nearly obsolete, and the wings and tail much longer. *Hab.* Table lands of Mexico, on the eastern side. (Type, No. 42,149, Orizaba, Mexico.)

Canace obscura, var. *fuliginosa* RIDGWAY.

CH. Most nearly resembling var. *obscura* (as distinguished from var. *Richardsoni*), but the colors much darker in shade, and the dark areas more prevalent. In specimens from the Sitka district the upper parts much washed with castaneous-rusty. *Hab.* Northwest coast, from Oregon to Sitka. (Types, No. 11,505, ♂ *ad.*, Cascade Mts.; No. 11,826, ♀ *ad.*, and No. 11,827, *juv.*, Chiloweyuck Depot, Washington Ter.)

Cupidonia cupido, var. *pallidicincta* RIDGWAY.

CH. Much smaller, and lighter colored than var. *cupido*. Upper parts about equally barred with pale grayish ochraceous and brownish-

dusky; beneath white, with faint, but sharply defined narrow bars of pale grayish brown. *Male* (No. 10,007, Prairies of Texas); Wing, 8·30; tail, 4·20; tarsus, 1·70; middle toe, 1·50. *Female* (No. 10,005, same locality); wing, 8·20. *Hab.* Southwestern prairies—Staked Plains?

Strix flammea, var. *Guatemalæ* RIDGWAY.

CH. In color resembling var. *flammea* of Europe, more than var. *pratincola* of North America, but more uniform above, and more coarsely speckled below. Wing, 11·30-13·00; tail, 5·30-5·90; tarsus, 2·55-2·95 (extremes of a series of thirteen specimens). *Hab.* Central America, from Panama to Guatemala.

Syrnium nebulosum, var. *Sartorii* RIDGWAY.

CH. Larger than the average of var. *nebulosum*, and the colors much darker and less tawny, being merely blackish sepia and clear white; face without the darker concentric rings of the North American form. Wing, 14·80; tail, 9·00. *Hab.* Eastern Mexico (Mirador). (Type, No. 43,131, ♀ ad., Mirador; "pine region." Dr. C. Sartorius.)

REMARKS.—This form is very different from var. *fulvescens* (Sel. and Salv. P. Z. S., 1868, 58) from Guatemala. I have seen a specimen of the latter collected by Van Patten, and now in the Museum of the Boston Society. The var. *nebulosum* stands between the two, being intermediate in nearly all its characters.

Scops asio, var. *Floridanus* RIDGWAY.

CH. Much smaller than var. *asio* and more richly colored in the rufous plumage, the red prevailing on the lower parts, where it is much broken into transverse bars. Wing, 5·50-6·00; tail, 2·75-3·10. *Hab.* Florida. (Type, No. 5,857, Indian River, Florida.)

Scops asio, var. *enano* LAWRENCE. Ms.

CH. Small, like var. *Floridana*, but the colors different. Gray plumage like that of var. *asio*, but the mottling above much coarser, and the nape with a strongly indicated collar of rounded white spots, in pairs on opposite webs. The red plumage not seen. *Hab.* Eastern Mexico, south to Guatemala.

REMARKS.—This well-marked race is founded upon a specimen from Mexico in Mr. Lawrence's cabinet, and one from Guatemala in the Museum of the Boston Society. The two are alike in colors, but, as might be expected, the southern one is smaller. This form resembles very closely the *S. atricapilla* (Natt.)—Temm. Pl. Col. 145—but may be immediately distinguished by the strongly haired toes, they being perfectly naked in *S. atricapilla*.

Falco communis, var. *Pealei* RIDGWAY.

?? *Falco niger* GMEL. S. N., 1789, 270.

Falco polygrus CASS. B. Cat. and Tex., pl. xvi (dark figure!).

CH. Entirely brownish-black, uniform above, faintly streaked with white below. No transverse bars on inner webs of tail feathers or primaries. Wings, 14·96–15·66; tail, 8·50; culmen, .95–1·10; tarsus, 2·00; middle toe, 2·15–2·20. *Hab.* Northwest coast of North America, from Oregon to Sitka. (Types, No. 12,622, ♀ ad., Oregon. Type of Cassin's figure above quoted! No. 45,814, ♀ ad. Sitka, Alaska.)

Falco columbarius, var. *Suckleyi* RIDGWAY.

CH. A miniature of *F. communis*, var. *Pealei*. Above, plain brownish-black, the tail tipped with white, but otherwise unmarked. Beneath pale ochraceous, broadly striped with sooty black. Wing, 7·35–8·56; tail, 5·25–5·75; culmen, .56–.55; tarsus, 1·36–1·62; middle toe, 1·25–1·35. *Hab.* Northwest coast of N. Am., from Oregon to Sitka. (Types, No. 4,477. Male, Shoalwater Bay, W. T., and 5,832, female Fort Steilacoom. Based on series of six specimens.)

REMARKS.—This form represents the northwest coast region of heavy rains and dense forests, along with the black Peregrine (*F. communis*, var. *Pealei*) the *Bubo Virginianus*, var. *Pacificus*, *Scops asio*, var. *Kennicottii*, *Bonasa umbellus*, var. *Sabinei*, *Canace obscura*, var. *fuliginosa*, etc. The light-colored form of the interior is probably the *Falco Richardsonii* Ridgway (P. A. N. S., 1870, p. 145), which I am now disposed to refer to the same stock as *F. esalon* and *F. Columbarius*. The latter two are certainly but geographical races of one species.

REGULAR MEETING, MONDAY, DEC. 1, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence :—

From Samuel L. Boardman, Augusta, Me., Nov. 18, 24, 28; E. W. Buswell, Boston, Nov. 19; C. H. Dall, Boston, Nov. 23; A. W. Dodge, Nov. 18; J. P. Franks, Nov. 20; George L. Gleason, Manchester, Nov. 5; Colman Harris, Nov. 14; C. H. Higbee, Boston, Nov. 21; Thomas Morong, Ipswich, Nov. 26; John Murdock, Cambridge, Nov. 24; A. V. Osborn, Waterville, N. Y., Nov. 25; C. A. Torrey, Boston, Nov. 15; U. S. Dep't of Agriculture, Washington, Nov. 17, 26. Vermont State Library, Nov. 18.

THE LIBRARIAN reported the following additions :—

By Donation.

- BUSWELL, E. W., of Boston. Miscellaneous pamphlets, 116.
 DEPARTMENT OF AGRICULTURE OF ILLINOIS. Transactions of, for 1872.
 MERRILL, CHAS. E., of New York. The Analytical Speller, by Edwards and Warren. 1 vol. 16mo. Miscellaneous Guide Books, 15.
 MORSE, E. S. Embryology of Terebratulina, by donor. 4to pamph. 1873.
 OSGOOD, C. S. Rules and Regulations of the School Committee of Salem, 1873. 1 vol. Svo.
 PEYTON, JOHN LEWIS, of Jersey, Channel Island, England. Memoir of Wm. Madison Peyton, of Roanoke, by donor. 1 vol. Svo. London, 1873.
 PUTNAM, F. W. The Politician's Register, by Benjamin Matthias. 1 vol. 12mo.
 QUINT, A. H., of New Bedford, Mass. Minutes of the General Association of Mass. for 1873.
 U. S. BUREAU OF EDUCATION. Circulars of Informations. No. 4, 1873.
 U. S. PATENT OFFICE. Official Gazette, Oct. 21, 28, Nov. 4, 11, 1873.
 WATERS, E. S. Miscellaneous pamphlets, 20.
 WHEATLAND, S. G. Cornhill Magazine, 25 nos. Miscellaneous pamphlets, 41.
 WILLSON, E. B. The Christian Freeman and Record of Unitarian Worthies, 1 vol., Nov., 1873.
 WORTHEN, A. H., of Springfield, Ill. Geological Survey of Illinois. Vol. v. Geology and Paleontology, 1 vol. 4to. 1873.

By Exchange.

- ARCHIV DER ANTHROPOLOGIE IN BRAUNSCHWEIG. Band vi, Heft 1, 1873.
 BOWDOIN COLLEGE. Catalogue of the Officers and Students of Bowdoin College and the Medical School of Maine for 1873-4.
 BUFFALO SOCIETY OF NATURAL SCIENCES. Bulletin of the, Vol. i, No. 3, 1873.

KONIGLICHE PHYSIKALISCH-ÖKONOMISCHE GESELLSCHAFT IN KÖNIGSBERG.
Schriften, Jahrg. xiii, 1872.

NATURFORSCHENDEN GESELLSCHAFT IN BASEL. Verhandlungen, Fünfter Theil.
Viertes Heft, 1873.

NATURFORSCHENDE GESELLSCHAFT IN BERN. Mittheilungen, Nos. 792-811, 1872.

PHILADELPHIA ACADEMY OF NATURAL SCIENCES. Proceedings of Part ii
Mch.-Sept., 1873. 8vo pamph.

ROYAL SOCIETY OF LONDON. Proceedings of Nos. 138-145. 8 pamphlets. 8vo.

SOCIÉTÉ DE PHYSIQUE ET D' HISTOIRE NATURELLE IN GENÈVE. Mémoires .
tome xxii, 1873.

ST. GALLISCHE GESELLSCHAFT OF ST. GALLEN. Bericht, Vereinsjahres, 1871-2.

SOCIÉTÉ VAUDOISE DES SCIENCES NATURELLES IN LAUSANNE. Bulletin, 2e
Série, vol. xii, no. 69, 1873.

VERMONT HISTORICAL SOCIETY. Records of the Council of Safety and Governor
and Council of the State of Vermont and Records of the General Conventions from
July, 1775-Dec., 1777. Vol. i. 1 vol. 8vo. Montpelier, 1873. Fourth Annual Report
of the Transactions of the Vermont Dairymen's Association, 1872-1873.

YALE COLLEGE. Catalogue of the Officers and Students of, for 1873-74.

ZOOLOGISCHE GESELLSCHAFT OF FRANKFURT. Zoologische Garten, Jan.-Jun.,
1873. 6 pamphlets. 8vo.

PUBLISHERS. Forest and Stream. Gardener's Monthly. Gloucester Telegraph.
Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter.
Lynn Transcript. Medical and Surgical Reporter. Nation. Peabody Press.
Salem City Post. Salem Observer. Silliman's Journal.

The PRESIDENT mentioned the recent decease of an
old and highly esteemed member of the Institute, Hon.
Benjamin F. Browne, of Salem, and suggested the ap-
pointment of a committee to take such notice of this
event as may be deemed most appropriate; the prepara-
tion of a memoir for insertion in the publications, or
otherwise, which was adopted.

The President, Messrs. A. C. Goodell, Jr., R. S. Ran-
toul, James Kimball and W. P. Upham were appointed
on said committee.

Adjourned.



REGULAR MEETING, MONDAY, DEC. 15, 1863.

Meeting this evening at 7.30 o'clock. The PRESIDENT
in the chair. Records of preceding meeting read.

President WHEATLAND stated that the sad information which we had so recently received rendered it appropriate for the Institute to take some action in regard to the loss which it had sustained in the death of one of its most esteemed corresponding members, Professor LOUIS AGASSIZ, and after making a few interesting remarks, alluding to his own acquaintance with Prof. Agassiz, and the influence he exerted in the promotion of scientific research in this country, called on Dr. A. S. PACKARD, Jr., who submitted the following resolutions :—

WHEREAS, our corresponding member, Professor LOUIS AGASSIZ, has been suddenly taken from us, while in the ripeness of his years,

Resolved, That in his death our society has lost a valued and most distinguished member, who, from an early period in its history, took a deep interest in its progress.

Resolved, That American science has met with an irreparable loss in the death of one who, by his genius for original research, his organizing ability, his eloquence, conspicuous enthusiasm and untiring industry, has done more than any one else to elevate, dignify and advance science in our country, and kindle a zeal for the study of nature in the western world which will be felt for generations to come.

Resolved, That in bringing to this country, the land of his adoption, new modes of research, he has here inaugurated an original method of teaching science, which will have the happiest influence in raising up original investigators and elevating the standard of education in our colleges and common schools.

Resolved, That in his death Science, from his large and comprehensive way of looking at Nature, has lost one of its most gifted followers; Letters, a most graceful and persuasive writer, and Humanity, in his lifelong devotion to all that tends to elevate the race, one of its best types.

In these resolutions, Mr. President, continued Dr. Packard, I cannot express the sense of personal bereavement that I feel in the loss of a beloved teacher and most estimable man. In the death of one who was so outspoken in behalf of the claims of science, the younger naturalists of America have lost a stanch and fearless friend. More than any one else, Professor Agassiz, in season and out of season, urged the teaching of science in schools of all grades. He placed the methods of teaching natural history on a more natural basis, and to him we owe very largely the introduction of science-teaching into our schools and colleges. The example he has left us of untiring industry, of devotion to truth, and of loyalty to sound learning, is one we would perpetuate. His sympathy in the objects of our society was often expressed. His death is a loss to our commonwealth and our country, and in science to whom shall we look to fill the peculiar place he held?

Vice President F. W. PUTNAM seconded the resolutions, speaking substantially as follows:—

In me, Mr. President, these resolutions call up the deepest feelings. Well do I remember the first meeting I had with Prof. Agassiz, when in 1856 he visited the old rooms of the Institute for the purpose of examining the collection of turtles, as he was then engaged on his work on the Testudinata of North America. I shall never forget the pleasure which I experienced when showing our collection to the great naturalist, especially as that meeting was the occasion of my being so intimately associated with him for years afterwards. I should be recreant to my duty on this occasion did I not here publicly acknowledge my great indebtedness to my old master for the uniform kindness received from him and the val-

able training which has enabled me to pursue my studies with the proper feeling of responsibility which every true naturalist must experience.

The teachings of Agassiz were thorough. His object was to prepare students for reliable work in the future, and his constant restraint upon them, preventing their publishing crude ideas, has been the cause of much misunderstanding regarding his method of teaching; but those who have passed through the drill never regret its enforcement.

The death of Agassiz is indeed a loss to American science; for to whom can we look as his successor in the minds of the people? It may be that his official positions can be readily filled; but who is there that will occupy, or is capable of occupying, the position which Agassiz has held in his relations to the science of the whole country?

It was his peculiar sphere to make science not only popular but respected as well, and it is to his great labors and peculiar adaptability for the work that we owe, more than to all other causes combined, the immense advances made in Natural Sciences in America during the last quarter of a century. But few men have done so much, or have had such power in influencing others in the cause of science as Agassiz. His name has been a household word, his fame and his kindness to all who loved science have brought students to him from all parts of the country, and his disinterestedness in his great work, combined with the enthusiasm with which he pursued it, has opened the purses of the rich and the treasury of the State to an extent unequalled in the annals of science. To wish, with him, has of late years been almost synonymous with to have; and well did he earn the right for it to be so. Working for the future of science in this country more than for his own immediate and personal

ends, he has been met by generous men who, appreciating his objects, have given him their support, and it is only by those who have not understood, or could not understand his great aims that he has been assailed. Yes, Mr. President, in moving the acceptance of the resolutions, proposed by one who also feels the obligation which all students of Agassiz must feel for the thoroughness of their training, I must express again that our loss is more than would ordinarily be the case, as our society had many ties uniting us with Agassiz. We can count six of our present or past active officers who have been brought up under his guidance, and his principles have thus become engrafted in our Institution, while the active interest he has always taken in our labors and the cordial aid that he has been ever ready to give our society, make his loss to us great and heartfelt. Personally I feel that a blank exists which words of mine cannot describe. Let us hope that the spirit with which our great master was imbued will inspire us with like enthusiasm for the fulfilment of our labors.

As a fitting tribute to the memory of Agassiz, and an acknowledgment of the indebtedness of the Institute for the aid and example he has given it, I propose that in addition to placing the resolutions which have been offered on our records, the Institute also place over the alcove containing our most important works in Natural History, the name of AGASSIZ.

Mr. Putnam was followed by Prof. E. S. MORSE, who was also once a pupil of Agassiz, Rev. E. S. ATWOOD, Rev. J. COIT, A. C. GOODELL, Jr., Esq., Hon. JAMES KIMBALL, and others, all of whom expressed their appreciation of the distinguished naturalist, and their sadness at his removal from the scenes of earth. .

The resolutions were then unanimously adopted, ordered to be entered upon the records of the Institute, and the Secretary was instructed to forward a copy of them to the family of the deceased.

SPECIAL MEETING, TUESDAY, DEC. 16, 1873.

A SPECIAL meeting was held this evening to celebrate the centennial anniversary of the destruction of the tea in Boston harbor, Dec. 16, 1773.

Before proceeding to the special object of the meeting, the following persons, nominated at a previous meeting, were duly elected resident members :—

John M. Bradbury of Ipswich, and Augustus D. Small, Joseph P. Fessenden, Oliver Carlton, George D. Putnam, Mrs. Francis Cox, George M. White, Caroline C. West, Ella Worcester, Sarah E. Smith, Alice Browne, J. Warren Thynge, Walter A. Hanson, Annie A. Agge, M. H. Richardson, Thomas B. Thayer, T. Lyman Perkins, Lizzie H. Hanson, John G. White, Henry W. Perkins, Mrs. George D. Putnam, of Salem.

President WHEATLAND opened the exercises by reading from the "Essex Gazette," of the ante-revolutionary period, a contemporary account of the destruction of the tea, and also from an original document of 1770, with the autographs of citizens of Rowley, protesting against the tax and binding themselves not to use tea nor have any dealings with the importers thereof until the obnoxious act was repealed.

Hon. JAMES KIMBALL followed with an admirable paper, carefully prepared, and presenting much historical infor-

mation of a very interesting character, derived largely from original sources. He gave a brief but comprehensive review of the causes which led to the transaction commemorated, with graphic details of the proceedings and personal sketches of some of the actors. Among these was Mr. Kimball's grandfather, William Russell, the father of our well remembered citizen, Col. John Russell, and the grandfather of Prof. John Lewis Russell, recently deceased. William was very active among the Sons of Liberty and participated in the destruction of the tea. He was intimate with Edes & Gill, the printers of the Boston Gazette, and with the leading patriots, and wrote patriotic articles for the paper. He was a teacher on the site of the Mayhew school, which is probably the legitimate successor of that taught by Russell. He was a participant in the revolutionary struggle, and was an inmate of the notorious Mill Prison and the Jersey Prison Ship, where he suffered many privations and contracted the disease which occasioned his death not long after the declaration of peace. While a prisoner he wrote the following lines, which were read as illustrative of the feelings engendered by the events of the times:—

[crew!

Great Mars, with me, come now and view, this more than Hellish
 Great Vulcan, send your thunder forth, and all their fields bestrew;
 Rain on their heads perpetual fire, in one eternal flame;
 Let black destruction be their doom, dishonored be their name;
 Send mighty bolts to strike the traitors North and Mansfield dead,
 And liquid fire to scald the Crown from Royal George's head;
 Strike all their young posterity with one Eternal curse,
 Nor pity them, no more than they have ever pitied us.

Mill Prison (Plymouth), England, Nov. 29th, 3 P. M., 1781.

WILLIAM RUSSELL.

When this was written Mr. Russell had been confined in prison nearly two years, on a charge of piracy, treason,

and rebellion, being taken prisoner on board the American Privateer Jason of Boston, John Manly, Esq., Commander.

The details presented by Mr. Kimball were listened to with close attention and profound interest. He exhibited a small portrait of the patriot in the costume of the period, and a tin tea caddy belonging to him, on which he had painted, after the disuse of tea, the inscriptions "COFFEE,"—"No TEA," which are still visible. Mr. Kimball also exhibited several books and manuscripts of historic interest, among which were a writing book with the patriotic mottoes of Mr. Russell's day, and the orderly book of the Artillery company in service in or near Boston during the revolution. These reliques were examined with much curiosity.

Vice President A. C. GOODELL, Jr., next made some remarks, and urged the Institute not to forget to observe, next year, the anniversary of the most important event of the ante-revolutionary period—which was really the initial act of the actual severance of our connection with the British crown—viz.: the proceedings which took place in our Court House here in Salem, in Oct., 1774, when the Great and General Court resolved itself into a PROVINCIAL CONGRESS.

Mr. Goodell exhibited a specimen of the veritable tea which caused the outbreak celebrated, and an antique teapot formerly in use in the Warner family of Ipswich (from which came our Salem Warners, esteemed citizens in past years), dating back to 1720. The tea was received from Mrs. Jonathan Perley, in whose family it was an heirloom, having come directly from Ezekiel Cheever of Sangus, one of the "Mohawks," who wore high-top boots at the time, and whose wife, on his return home, collected

and preserved the tea which had lodged in the tops of his boots.

J. WINGATE THORNTON, Esq., of Boston, followed Mr. Goodell, and gave forcible reasons why Salem shold take a particular interest in this celebration and the principles it illustrated and enforced.

He referred pertinently to Hugh Peters and Sir George Downing, former residents of Salem, and their influence on Cromwell and the Commonwealth of England, and reminded the audience that Downing, a graduate of the first class of Harvard College, lived on the site of Plummer Hall, and he had probably fitted for college, and his youthful voice often resounded, within hearing of the place where they were assembled.

The meeting then adjourned, and the company were invited to one of the ante-rooms, where refreshing draughts of tea were dispensed, two or three kinds of the fragrant herb having been generously furnished for the occasion by the Oriental Tea Company. Copies of a paper entitled the "Tea-cup," containing a graphic account of the destruction of the tea and its attendant circumstances, by the learned antiquarian, Dr. N. B. Shurtleff, of Boston, were also distributed.

The celebration was a success and gave great pleasure to those who participated in it.



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